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The clinical gut. Examining the cognitive processes underlying therapist's intuitive judgments in the psychotherapy session

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PhD in Psychology

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This dissertation was only possible because I was never alone.

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Resumo

Compreender os processos cognitivos subjacentes os julgamentos clínicos pode ter um papel essencial para otimizar a prática clínica e direcionar o futuro da investigação em psicologia clínica e psicoterapia. Esta dissertação leva conhecimentos da área científica de julgamento e tomada de decisão para o domínio e de psicologia clínica para alcançar o seu objetivo último, compreender as intuições clínicas sobre pessoas que apresentam sofrimento psicológico ou sintomas de doença mental. Especificamente, esta investigação estuda intuições clínicas e a tendência para confirmar hipóteses em diferentes dimensões clínicas e de perceção de pessoas. Em três capítulos empíricos, esta dissertação apresenta três linhas de investigação baseada em estudos experimentais. Ao investigar os processos cognitivos subjacentes à geração e teste de hipóteses de diagnósticos de perturbação psicológica, no ajustamento de inferências de traço e de impressões de personalidade em função de informação contextual, e o julgamento da competências e previsões de sofrimento futuro em situações de sofrimento insuportável e decisões de eutanásia, esta investigação demonstrou como as características das tarefas favorecem um processamento confirmatório e em que condições esta tendência é reduzida ou eliminada. Esta dissertação explorou ainda as implicações do uso de estratégias de processamento confirmatório e desconfirmatório no contexto de psicoterapia e propõe novas direções para estudos futuros. Esta investigação proporcionou nova evidência empírica para estimular investigação na área da tomada de decisão clínica e para colmatar as falhas entre prática investigação em psicologia clínica e a prática e treino de psicoterapia.

Palavras-chave

Tomada de decisão clínica, Intuição, Processamento confirmatório

APA PsycInfo Classification Categories and Codes

2340 Processos Cognitivos

3040 Perceção Social & Cognição

3120 Traços de personalidade e processos

Abstract

Understanding the underlying cognitive processes of clinical judgments may be critical to optimizing clinical care and focusing future research on clinical psychology and psychotherapy. The present dissertation brings insights from decision science to the clinical psychology realm to achieve the overarching goal of understanding clinical intuitions about those expressing psychological suffering and symptoms of mental illness. Specifically, this research studies clinical intuitions and the tendency to confirm hypotheses in different clinical and person perception domains. In three empirical chapters, we present three research lines based on experimental studies. By investigating the cognitive processes underlying the generation and testing of psychological disorder diagnoses, the adjustment of trait inferences and personality impressions according to contextual information, and the judgment of competence and the predictions of future suffering in conditions of unbearable suffering and euthanasia decisions, this research demonstrated how task characteristics favored confirmatory strategies and explored under which conditions this tendency was reduced or eliminated. This dissertation further explores the implications of using confirmatory and disconfirmatory processing strategies in the context of psychotherapy and proposes new directions for further investigation. This research provided empirical evidence we hope will stimulate the area of clinical decision making and to bridge the gap between research in clinical psychology and psychotherapy practice and training.

Keywords

Clinical decision making, Intuition, Confirmatory processing,

APA PsycInfo Classification Categories and Codes

2340 Cognitive Processes

3040 Social Perception & Cognition

3120 Personality Traits & Processes

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Chapter 1 – Introduction

Clinical decision making and dual process models of decision making

Understanding the underlying cognitive processes of clinical judgments may be critical to optimizing clinical care and focusing future research. The present dissertation brings the insights from decision science to the clinical psychology realm to achieve the overarching goal of understanding clinical intuitions about individuals expressing psychological suffering and symptoms of mental illness. A psychotherapy process requires that therapists make judgments about what the client is describing and decide when and how to use a certain technique (Goldberg, et al., 2018; Weisz et al., 2011).

Decades of decision science research has discussed the existence of a dual-processing cognitive system (e.g., Evans & Stanovich, 2013; Hammond, et al., 1987; James, 1980; Kahneman & Frederick, 2002, 2005; Sloman, 1996; Smith & Collins, 2009). Dual process models of judgment and decision making distinguish between *Intuitive* processes that are rapid, automatic, high capacity, and occur outside of one's awareness – and *Analytic* processes that are slow, deliberate, and occur in the context of active awareness and engagement (Hammond, 1996; see also Bargh & Chartrand, 1999; Evans, 2006; Haidt, 2001; Kahneman & Frederick, 2002, 2005; Sloman, 1996, 2002; Stanovich, 1999). Although the relation between these two systems is still under discussion (e.g., Evans & Stanovich, 2013; Kruglanski & Gigerenzer, 2011), it is clear that intuitive and analytic judgments and decisions reflect different methods of processing information and often lead to different judgment outcomes.

Despite the great number of studies exploring cognition through a dual processing lens, debate continues about the "accuracy" of each method (intuitive and analytic) in different judgment circumstances. In a meta-analysis focusing on the comparison of human intuitive judgments and models of analytical reasoning methods, researchers concluded that despite human capacity for sound judgment and decision-making, mathematical analytical models seem to be more accurate due to the susceptibility of human judgment to bias from task characteristics and conditions (e.g., Karelaia & Hogarth, 2008), suggesting that deliberate and rational judgment processes may not serve the purpose of accuracy in every judgment task, especially when compared with computerized mathematical judgments. Indeed, the preference or tendency to think analytically is a key factor in rational thinking (Stanovich, 2004), which is associated to more accurate responses in logical problems. For instance, the Cognitive Reflection Test (CRT; Frederick, 2005), which contrasts intuitive and analytical judgment methods (in this task, incorrect or correct, respectively), directly shows that in logical tasks analysis overrides intuition (Frederick, 2005; Toplak, et al., 2011), which suggests that in certain tasks and conditions, analytical thinking leads to higher accuracy.

Conversely, some research focused on exploring the benefits of intuitive and analytic processes has emphasized that complex choices benefit from intuitive reasoning methods (e.g., Dijksterhuis, et al., 2006; Gigerenzer & Gaissmaier, 2011). For instance, Dijksterhuis (2004) presented participants with

complex decision problems in which they had to choose one from several alternatives, such as apartments. Participants that were distracted for a few minutes before indicating their decision made better decisions (i.e., they chose the apartment with more positive and fewer negative attributes) than participants that were asked to think carefully about the options (Dijksterhuis, 2004). Intuition has also been shown to lead to better results in person perception. For instance, research focused on distinguishing intuitive and deliberative analytical processing tested the accuracy in the detection of deception in inmate confessions. This research showed that viewing brief random clips of expressive behaviors and making judgments based upon incomplete information (a paradigm known as thin slicing, e.g., Ambady & Rosenthal, 1993) led to more accurate judgments of deception than watching full confession videos. Moreover, this tendency for higher accuracy in the intuitive condition was also found for participants who watched the confessions while simultaneously completing a cognitively demanding task, but not for participants who had to provide reasons for their impressions prior to their veracity judgments (Albrechtsen, et al., 2009). Analyzing reasons for previous decisions may highlight the salience of plausible explanations for the decisions, criteria believed by people to be relevant for the decision, but that do not lead necessarily to optimal decisions (Wilson & Schooler, 1991). This may be especially relevant for a therapist with limited experience, who is focused on deliberately using learned theoretical knowledge to better understand the client. In sum, research leaves unclear when and how intuitive and analytical judgments lead to more accuracy.

Clinical psychological research on the accuracy of intuitive and analytic methods is similarly equivocal in nature. Therapists are charged with making clinical judgments both during and between clinical sessions. Clinical judgments are defined as any judgment and/or decision made by the therapist about the client and/or case during the therapy process (Garb, 1998, 2000, 2005). These judgments may be driven by intentional and formal reasoning tasks and/or spontaneous and automatic judgments and decisions. In intentional tasks that are expected to occur outside of the psychotherapy session, such as making a diagnosis, case formulation, and treatment planning (among others, see Garb, 2005), the therapist is likely to be aware that a judgment process is taking place (see Bargh & Ferguson, 2000; Wegner & Bargh, 1998). However, clinical judgments can also be driven by spontaneous and intuitive decisions in circumstances where the therapist is less aware that a specific judgment process is occurring. For example, when the therapist associates a coping strategy used by the client in a past situation to the client's description of an episode in a different context; or when the therapist makes an inference about the client's personality based on a specific behavior. Different types of judgments, more intentional or more spontaneous, are governed by different processes (analytic and intuitive) that utilize different information, and may result in more or less optimal outcomes, depending on the circumstances in which they occur.

The majority of clinical decision-making research has focused on clinical judgments or decisions that are made outside the therapy session, such as making a diagnosis or conceptualizing a case (Garb, 2005). Important insights on the accuracy of intuition in the clinical setting have emerged from naturalistic studies of professionals charged with difficult decisions in complex clinical contexts occurring outside the therapy session (Klein, 2008; Lipshitz, et al., 2001). For instance, De Vries and colleagues found that unconscious intuitive processing of complex cases (co-morbidity descriptions based on the DSM-IV casebook) resulted in significantly more correct diagnoses than conscious analytical processing of the same cases. Specifically, performing a distracting task such as word-finding puzzle after processing the complex clinical cases (intuitive condition) led to more accurate diagnoses than spending the same time thinking about the cases described (analytical condition) (De Vries, et al., 2010).

Conversely, a recent randomized clinical trial (Weisz et al., 2012) compared youth outcomes in the conditions of usual care, standard manual treatment care, and modular treatment, providing treatment by modules in which the order in which models would be implemented could vary depending on decisions associated to each module. This research tested how planned and measurement-based treatment flexibility may facilitate the coverage of more problems compared with standard manualized treatment and may be more effective than usual care, in which therapists tend to rely on their intuitions. In the usual care condition, therapists were asked to deliver therapy as they would normally do; in the standard manual treatment condition therapists were trained in three different treatment protocols and asked to use them exactly as described in the manual, following the exact steps as indicated. In the modular treatment condition, therapists were trained in the same three treatment protocols, but were instructed to use MATCH, a collection of modules designed to correspond to the treatment procedures. These modules could follow a different order of implementation according to case specific needs. The MATCH implies the use of standardized measures to build a flowchart for the specific problem (e.g., depression), which defines a default sequence of modules. If this default sequence cannot be implemented as expected (e.g, if phobia symptoms are identified), the sequence is altered, with other modules used systematically. Researchers found that youth in modular treatment showed significantly faster improvement and better outcomes than youth in usual care and in the standard manual treatment protocols. Interestingly usual care showed no differences form the standard manual treatment condition (Weisz et al., 2012). This research suggests that clinical decisions following a decomposed and analytical method that allows clinicians to flexibly adapt to the client's needs can lead to better outcomes than do structured manual's rules, in which therapists have little space to make their judgments, but also than therapists' idiosyncrasy, in which therapists have great space for their own judgments and decisions. This valuable research left unexamined the role of therapists' intuitions in the modular

condition and what prompted therapists to identify, for instance, Phobia symptoms in a case of Depression (automatic intuitive judgments or an analytical structured of alternative diagnosis).

A meta-analysis of 136 psychotherapy studies revealed that judgments made by therapists, based on therapists' intuition, were approximately as accurate as analytical predictions (Grove, et al., 2000). Perhaps the most appropriate conclusion to draw is that despite the fact that one judgment method may be more "accurate" when conducted by particular individuals in certain circumstances, it may not be appropriate to use in different conditions. Simultaneously, it is important to acknowledge that in many clinical cases there is no one "correct" outcome or decision, particularly in clinical practice, and so it may be most useful for clinical judgment research to focus on the processes through which judgments are made, the impact these judgments may have on subsequent therapist behaviors, and ultimately client outcomes. Our goal, then, is to increase understanding of the underlying processes that occur when therapists cannot use effortful, deliberate, and analytical judgment methods.

Clinical Judgments as Testable Hypotheses

A clinical case conceptualization is often characterized by a great deal of information, sometimes difficult to integrate. In order to deal with the challenge of understanding a case and defining a treatment plan that meets clients' needs, Persons and colleagues (2013) assert the importance of testing clinical judgments and initial case conceptualizations for optimizing therapy effectiveness. Similarly, Schon (1983) identifies the implicit and tacit knowledge underlying therapists' judgments that may fall outside of the therapists' awareness. Accordingly, he proposes a reflective practice in which the clinician deliberately analyzes their own thoughts, actions and feelings with the goal of informing subsequent clinical work and leading to clinical judgment adaptations. Indeed, there is literature to suggest that it may be helpful to identify proximal goals for a therapeutic case, to allow therapists to use controlled and deliberate reasoning in their judgments (Arnoult & Anderson, 1988; Strohmer, et al., 1990). In this case, highlighting the therapist's clinical goals for each intervention would facilitate the clinical judgment testing process (Persons et al., 2013) and allow the therapist to check whether goals are being met.

This hypothesis formulation and testing process in the psychotherapy context is clearly not a new idea. Several researchers have proposed that testing one's clinical hypotheses is analogous to the scientific method where the goal is to focus on observation, hypothesis generation, and testing (Apel, 2011; Hayes, et al., 1999). Specifically, *hypothesis generation* involves using data to formulate a judgment: making an inference about a theme or idea. The hypothesis generated should then be tested in terms of its veracity, by gathering evidence and examining whether it supports the hypothesis or not (e.g., Kelley, 1972; Thomas, et al., 2008). Although no experimental studies, to our knowledge,

have directly tested the effect of therapists' use of the scientific method in practice, support for the effectiveness of this approach can be drawn from previous research. Mounting research results suggest that when therapists received ongoing feedback regarding client progress, the number of clients who responded positively to treatment increased, including clients with treatment resistance (Lambert, et al., 2005). This feedback contains individual client item responses and summary scores from standardized symptom and functioning measures that inform clinical decision making (e.g. Lambert, et al., 2001; Milleret al., 2003). This research is especially relevant considering that any behavior performed by the client during the therapeutic process can be used by the therapist as feedback about the treatment plan being implemented. To overcome potential bias associated to these unstructured feedback judgments, evidence-based feedback is more beneficial if provided to therapists in a planned and automated fashion, using a measurement feedback system (e.g., Kelley & Bickman, 2009). This measurement feedback system goes beyond the focus on measures and evidence-based treatment planning, and emphasizes the utility of continuous monitoring and timely feedback that is comprehensive and concurrent with treatments (e.g., Garland, et al., 2009). Ultimately, the goal of a system of timely feedback based on valid, reliable and standardized measures is to prevent the use of unstructured information from clients that is subject to therapist's cognitive and motivational bias, thus consisting of a central aspect to quality psychotherapy and professional improvement (e.g., Bickman, 2008). Interestingly, Karelaia and Hogarth (2008), in their meta-analysis about the processes underlying analytical judgments demonstrated that lay people learn more efficiently from feedback that instructs them about the characteristics of their tasks than from feedback about the outcomes of their judgments, which highlights the role of task characteristics in the judgment process (Karelaia & Hogarth, 2008).

A meta-analysis focused on understanding in which conditions practitioners of mental health should use intuitive clinical judgments versus statistical methods, focused on studies comparing the judgment outcomes of the same clinical judgments, such as diagnosis and prognosis, made by mental health practitioners (i.e., professional clinical psychologists or graduate students) and the outcomes obtained through some statistical formulas (Ægisdóttir, 2006). This research focused on judgments that implied predictions and found, in general, a higher accuracy of statistical over intuitive clinical methods (Ægisdóttir, et al., 2006), replicating the findings of a previous meta-analysis developed by Grove and colleagues (2000) (see also, Dawes 1993, Dawes, et al., 1989 and Meehl, 1954). Moreover, they found a superiority of statistical methods even when therapists were provided with more information than the statistical formula (Ægisdóttir, et al., 2006). This meta-analysis also found that when judgments were made by expert therapists, the difference between clinical and statistical methods did not occur, whereas when the therapists were non-experts, they were consistently outperformed by statistical formulas. Overall, these results may suggest that task characteristics, such

as whether tasks require a predictive judgment (predicting the likelihood of symptoms' reduction after psychotherapy; the likelihood of a person to commit a physical offense again or predicting academic performance) or a comprehensive judgment (for instance, identify the main factors contributing to the symptoms), are key variables for the processes used in clinical judgments and therefore, for the accuracy of clinical judgments.

Altogether, these results support our argument that clinical research should examine the decision-making processes underlying therapists' judgments, in addition to focusing on client's patterns of symptoms. There are currently efforts underway to determine how to best integrate feedback to guide psychotherapy practice (e.g., Goldberget al., 2018; Lambert et al., 2001, 2002, Sundet, 2011; see Sundet 2012 for a review) and to implement what is often referred to as "measurement-based care" in large community mental health centers (Lewis, et al., 2015). For instance, humanistic psychotherapy research focused on the impact of different types of session outcomes, such as a session's helpfulness, depth and smoothness, as immediate feedback for therapists. This literature has demonstrated the impact of linking the therapist's and client's experience in a session to therapists' specific interventions in that same session (e.g., Hill et al., 1988; Elliot & Wexler, 1994). As another example, the *Case Formulation-Driven Approach* put forth by Persons and colleagues (2013) advocates for developing and testing clinical hypotheses in order to optimize the fit of the case conceptualization, which is meant to guide therapy sessions and treatment planning. Findings from naturalistic studies indicate superior outcomes for this case-conceptualization based approach (reduction in depressive symptoms) when compared to treatment that was not guided by a testable formulation (Persons, et al., 1999).

In sum, elevating therapists' questioning about their understanding of the case and the client may serve as a pathway to optimizing clinical judgments. However, this questioning is a demanding process that requires analytical judgment and, consequently, depends on therapists having cognitive resources and time to process information about the case, which are not easily available during the actual therapeutic session.

Context and task complexity affect the judgment method used

Making clinical judgments demands the synthesis of information about a client presented in different formats and from different sources, including theoretical information (e.g., conceptualizing the client's maladjustment as a function of cognitive or behavioral processes as in Cognitive Behavioral Therapy, or as a function of ego defense mechanisms as in Psychodynamic Therapy), empirical information (e.g., data from self-report assessments), and information from the therapist's past experiences (e.g., past history of treating anxiety; Eells, 2011). Additionally, the therapist must consider information regarding emotional (e.g., client's level of distress) and culturally-relevant content (e.g., client's cultural

background and values), which further increases the level of information complexity. All of this information is obtained and considered in two very different contexts: within and between therapy sessions.

The present research is based on empirical evidence showing that the context in which a judgment task occurs is a key factor influencing judgment method (intuitive and/or analytical; Hammond et al., 1987). Tasks that occur between sessions can be viewed as fundamentally different from tasks that occur within session because of context characteristics (e.g., time, cognitive complexity of the task, information available). Research suggests that *analytical tasks*, defined in this research as tasks that can be decomposed into smaller parts and approached sequentially in a deliberate process, tend to be conducive to analytical reasoning (see Hammond et al., 1987). For instance, conferring a diagnosis as a result of a thorough case conceptualization can be viewed as an analytical task in which the therapist presumably has access to the client's endorsement of symptoms (often obtained in an interview) that can be sequentially mapped onto the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM–5; American Psychiatric Association, 2013). Conversely, intuitive holistic tasks, which cannot be easily decomposed into smaller parts, do not have an obvious sequence, and require the information to be processed as a whole, are conducive to intuitive methods (e.g., Hammond et al., 1987). For instance, within a therapy session, a client may present as very distraught and the decision to provide emotional support versus conduct a risk assessment cannot be easily decomposed into steps and approached sequentially.

In this project we argue the clinical session is a context in which clinical judgments are generally not easily decomposed. That is, given the complexity of the information within the session context, therapists are likely to use an intuitive judgment method (Dane, et al., 2012; Hogarth, 2010). The majority of the judgment and decision-making literature in clinical psychological science has focused on intentional and deliberate clinical tasks that typically occur between sessions and can have the necessary conditions for a sequential analytical method (see Garb 2005; Grove et al., 2000). Garb (2005) identified five types of clinical tasks that tend to favor and may benefit from analytical reasoning: (a) description of personality and psychopathology, (a) diagnosis, (c) case formulation, (d) behavioral predictions, and (e) treatment decisions. For these tasks, the therapist makes intentional judgments about the case in a context outside of direct client contact; therefore the therapist is likely aware that the diagnosis or case conceptualization is the result of an analytical reasoning method (e.g., Bargh & Ferguson, 2000; Wegner & Bargh, 1998). This awareness may serve as a cue to revise the judgment process and outcome, including what information was pondered and how it was integrated in the clinical judgment, thus facilitating the testing and the possible correction of the judgment made. Some literature has suggested that people can use explicit reasoning rules, be aware of the information

used and weigh different pieces of information, in their judgments, when cognitive and attentional resources are available (e.g., Rieskamp & Hoffrage, 2008).

There is a dearth of research exploring the complexity of the clinical session context and how this context influences the clinical judgment methods used. This is unfortunate because the face-to-face time between the therapist and client in the clinical session presents contextual constraints not present while a therapist is developing a case conceptualization or assigning a diagnosis between sessions (e.g., Elliot & Wexler, 1994; Hill, 1990). Therapists must make within-session clinical judgments and decisions under time constraints, productivity pressure, and while considering emotional and relational factors, all of which add to the complex and demanding nature of clinical interactions and likely promote the use of intuitive reasoning (see Klein, 1993, for other examples of decision-making demands in real world settings). In contexts such as the clinical session, even when the therapist is intentionally and actively engaged in using an analytical judgment method, the context complexity favors automatic, fast, and uncontrolled intuitive judgments, in which the therapist is less aware of the information used to make the judgment. Moreover, decisions made outside of the therapeutic session frequently rely on the therapist's recollection of what occurred during the session, which is influenced by contextual factors and cognitive and time constraints. Unfortunately, with mental healthcare more often focused on service quantity, as opposed to quality, this may have important implications for clinical practice outcomes and training of therapists.

Tasks in which the therapist is unaware of his or her judgment processes are likely present in every clinical session. For example, consider a therapist who is actively working with a client on developing a collaborative therapeutic relationship. In a clinical session, the therapist may be curious about the client's perspective on the role of a collaborative alliance in psychotherapy outcomes and on the client's experience in psychotherapy, which leads to intentional information gathering. However, this intentional decision of gathering information, may be accompanied by specific automatic intuitive judgments, about what information should be collected (e.g., which of the client's emotions to attend to, which of their own skills to employ to assess psychotherapy impact on the client's feelings) or how to order the questions (e.g. to first address client's experience overall and then drill down to specific topics, or vice versa; see Elliot & Wexler, 1994). As such, within the session, the process of attending to relevant information is likely a judgment made using an automatic or intuitive process that occurs with little awareness on the part of the therapist (e.g., Bargh & Ferguson, 2000). This is a prime example of an intuitive reasoning process that may invoke little awareness on the part of the therapist of a judgment being made. The lack of awareness may prevent the therapist from revising the judgment, as it is difficult to unpack what information was considered and disregarded to make the judgment (e.g., Bargh & Ferguson, 2000). In other words, not being aware of the judgment method

prevents further judgment validation, which may compromise therapy effectiveness (see Garb, 1998; Persons & Bertagnolli, 1999).

Confirmatory tendency of hypothesis validation

Research has repeatedly demonstrated that individuals primarily seek information that confirms their existing hypotheses (Doherty & Mynatt, 1990; Klayman & Ha, 1987; Nickerson, 1998). For instance, many social cognition studies suggest that when testing hypotheses about another person's personality (e.g., that an individual is introverted) people tend to generate questions that inquire about behaviors consistent (introverted behaviors) with the hypothesized trait rather than with the alternative trait (extroverted behaviors; Devine, et al., 1990; Evett, et al., 1994; Eyal, et al., 2011; Hodgins & Zuckerman, 1993; Skov & Sherman, 1986; Snyder & Swann, 1978). Retrieval of evidence from memory appears to be similarly biased in favor of confirming hypotheses (see Koehler, 1991). The presence of ambiguous information also frequently results in interpretations that are consistent with a generated hypothesis (e.g., Darley & Gross, 1983; Higgins, et al., 1977). For instance, observers looking for signs of anger to test their hypothesis that an individual is hostile may interpret pranks and practical jokes as displays of anger rather than as humorous acts (Trope, 1986). Moreover, studies of social judgment also provide evidence that people tend to overemphasize positive confirmatory evidence and underemphasize negative dis-confirmatory evidence. For instance, individuals generally require less hypothesis-consistent evidence in order to accept a hypothesis than they require hypothesis-inconsistent information to reject a hypothesis (Pyszczynski & Greenberg, 1987), and data consistent with the hypothesis is weighted more strongly (e.g., as a result of a theory guiding the hypothesis) than data that is not consistent (Zucherman et al., 1995). Accordingly, research in clinical decision making has demonstrated that causal coherence between clients' symptoms and the knowledge and beliefs therapists have about clinical theory leads to higher diagnosis ratings (Flores et al., 2014, Hagmayer et al., 2018, Rehder, 2003, Rehder & Kim, 2006, 2010), which suggests a confirmatory tendency when processing information.

Moreover, the ease and automaticity with which intuitive judgments are made may elicit a metacognitive feeling of confidence in the initial judgment, described in the literature as a subjective *feeling of rightness* (FOR; Thompson, et al., 2011). In other words, therapists likely feel confident in their judgments when using intuitive reasoning, and therefore perceive judgment outcomes as valid (see Thompson, 2009, 2010). This sense of validity may subsequently result in less alternative hypothesis consideration and limited disconfirmatory information seeking (e.g., Alter, et al., 2013; Dane et al., 2012; Morewedge & Kahneman, 2010; Thompson, et al., 2013). In sum, research has robustly demonstrated that confirmatory strategies can stem from intuitive judgment processing.

In order to circumvent the natural tendency toward confirmatory bias, alternative hypotheses should be considered (Thomas at al., 2008). However, exhaustive analysis of the primary hypothesis and its alternatives are likely to occur only under optimal conditions (i.e., between sessions) – when motivation and cognitive resources are readily accessible (Trope & Liberman, 1996), a circumstance rarely achievable in the psychotherapy setting. Under suboptimal conditions (i.e., within clinical sessions), hypothesis generation and testing may not involve alternative hypotheses or may involve alternative hypotheses that are complementary to the primary hypothesis, maintaining the likelihood of falling victim to confirmation bias (e.g., Arkes, 1991; Trope & Liberman, 1996). Unfortunately, this confirmatory tendency may compromise therapists' ability to make optimal clinical judgments that address clients' needs, which could ultimately limit successful therapeutic outcomes.

Processing information analytically implies deliberately identifying the information needed to make the judgment and the underlying rules and criteria (e.g., Evans & Stanovich 2013; Tversky & Kahneman, 1974; Sloman, 1996) which may decrease confirmatory processing, possibly resulting in less biased reasoning. Intuitive processes rely on associative processing that depends on the activation of information as determined by the strength of associations between each piece of information (e.g., Morewedge & Kahneman, 2010). In this sense, intuitive processing integrates the available information and leads to processing not dependent on formal rules and sequential steps (e.g., Hammond, 1996; Bowers, et al., 1990; Dijksterhuis, 2004; Wilson & Schooler, 1991). However, analytical processing has not been proven clearly superior. In fact, a meta-analysis focused on testing the accuracy of predictions based on other's behavior, for instance in circumstances of non-verbal interaction, demonstrated that the accuracy of predictions based on very short clips of behavior (approximately 30 sec) that should lead to a more intuitive processing, did not differ from the accuracy of longer behavior clips (1 to 5 min) that should facilitate more systematic and analytical processing. These results showed that processing more information for a longer period of time (longer clips) did not lead to more accurate impressions of others than processing less information in less time. It suggests that human behavior is categorized into an impression based on little information and this impression is not significantly updated (as to reach more accurate judgments) by the presentation of further behavior information (e.g., Ambady & Rosenthal, 1992). Intuitive processes also seem to outperform analytical thinking when explanations were demanded to justify judgments and decisions that required the computation of complex information (Abernathy & Hamm, 1995; Berry & Broadbent, 1988; Dijksterhuis, 2004; Pretz, 2008; Schooler & Melcher, 1995; Wilson & Schooler, 1991). Interestingly, this line of research emphasized how analytical approaches may favor misleading processing or the neglect of relevant information, whereas intuitive judgment processes, by favoring rapid processing of a great amount of information, may favor taking into account more information or the identification of the most relevant information (for a review see Evans, 2008. However, less is

known about the underlying process in relation to clinical judgments and outcomes, particularly when the information presented to the therapist leads to the generation of a main hypothesis or makes salient a cognitive schema. Specifically, research is scarce regarding the processes underlying therapists' use of subsequent information to test intuitively generated hypotheses about clients.

The role of dispositional attribution on validating mental illness symptoms

A case conceptualization requires that therapists form an impression about the client that involves understanding the client's personality and identifying the symptomatic mechanisms causing and maintaining the symptoms (e.g., Eells, 2011; Persons, et al., 1999); which may require a distinction between the client's personality traits and symptomatic behaviors. In other words, the therapist's task includes the generation and testing of two types of hypotheses: a personality impression hypothesis and a diagnosis impression hypothesis. However, the distinction between these two types of impressions is not always clear. Personality impressions imply the attribution of a client's behavior to personality. Behaviors are thus thought to be caused by the individual's personality, and therefore to be stable across time and circumstances (e.g., Dweck, 2008). Diagnosis impressions, on the other hand, imply an attribution of the clients' behavior to their disorder. Behaviors are thus thought to be caused by the disorder: a condition associated with certain behaviors and feelings (symptoms); a context, and therefore to be less stable which can be expected to end at a certain time and to be exacerbated or reduced in certain contextual circumstances (DSM-V). These two types of inferences serve very different purposes: one is to identify the person's personality and the other is to identify a pattern of symptoms; or in other words these inferences may serve the purpose of differentiating the symptoms of a disorder from the personality. Note, however, that distinguishing whether a behavior represents a personality trait or disorder's symptom is often unclear and difficult and should depend on the perceived stability/malleability of the attributes, whether the attributes change, but also of the perceived stability of personality and of the disorder. If personality is believed to be stable and symptoms are perceived to be temporary, then the inference depends on how malleable is perceived to be the attribute (e.g., Molden & Dweck, 2006). For instance, if extroverted people spent the last month without being with their friends, it can lead to the inference that the described behavior is a symptom. However, if people have always showed the tendency to be isolated, it can lead to the inference that the described behavior reflects a personality trait. However, this contrast may be hardly achieved, or even utopic, in the psychotherapy context. This may be the case if personality traits are believed to increase the proclivity to a psychological disorder or that a psychological disorder is untreatable and, therefore, is functionally part of person's personality. Of interest is the possible confound between personality and clinical impressions.

A large body of research from the field of social psychology has shown that people spontaneously infer stable traits from behaviors without intention (Uleman, et al., 1996, Todorov & Uleman, 2002), or awareness (e.g., Wegner & Bargh, 1998). This automatic inference of stable personality traits is often accompanied by the tendency to neglect contextual factors (a phenomenon known as correspondence bias) (Gilbert,2002; Gilbert & Jones, 1986; Gilbert & Malone, 1995; Jones & Harris, 1967, for a review, see Gawronski, 2004), leading to automatic attribution of behaviors to personality. For example, we are likely to infer that a person is lazy (attribution to personality) because he or she spends the day on the couch, neglecting alternative contextual explanations, such as a leg injury, extreme fatigue after having run a marathon, or depression. For example, Jones and Harris (1967) developed a paradigm in which participants were asked to infer the attitudes of a person based on an essay previously written by that person. Participants read a short essay in favor of Fidel Castro, which had been written by another participant and asked to assess the essay writer's attitude towards Fidel Castro based on the essay. In the choice condition, participants were told the person who wrote the essay was free to express their own opinion. In the no-choice condition, participants were told that the person who wrote the essay was instructed to write a pro Fidel Castro essay. Researchers found that participants tended to infer positive attitudes towards Fidel Castro, even in the no-choice condition, suggesting a tendency to make dispositional attributions and neglect contextual causes of the behavior (Jones & Harris, 1967). Later work found that dispositional trait inferences could be adjusted when a contextual alternative cause for the behavior was made salient (e.g., Gilbert, et al., 1988; Gilbert, 1998, 2002; Gilbert & Malone, 1995; Trope & Gaunt, 2000; for a review, see Gawronski, 2004). For instance, Krull (1993) demonstrated that having an inferential situational goal, which is expected to emphasize the role of the context as a cause, can reduce the correspondence bias. In a study comparing the role of dispositional and situational inferential goals, it was demonstrated that having in mind a situational goal reduced an automatic dispositional inference than having in mind a dispositional inference (Krull, 1993). For example, when observing a person showing signs of distress, asking participants to understand the situation led to an initial judgment focused on the situation (e.g., anxiety-provoking topic).

Making dispositional inferences, however, can occur, not because the context/situational cause is neglected but rather, because the trait is believed to be an essential condition required if someone is to perform the behavior (Reeder, 1993; Gawronski, 2003) or because the behavior is highly diagnostic of a certain trait, even in the presence of contextual constrains (Trope & Liberman, 1993). In the present research, we examine the tendency to neglect contextual causes and rather follow a confirmatory tendency to attribute behaviors to individuals' personality, with the aim to explore how people adjust dispositional inferences when the alternative contextual explanation for the behavior is a psychological diagnosis. We argue that the adjustment of a dispositional inference should be

expected if a psychological disorder is considered a contextual explanation for the behavior. As described by DSM-5 (American Psychological Association, 2013), in an ideal clinical psychological diagnosis and treatment, a person's maladaptive behavior is attributed to the psychological disorder rather than to his or her personality. For instance, an individual who spends the day on the couch should not be assumed to be lazy if she has been diagnosed with depression. Such erroneous attributions by the general public may have deleterious consequences for treatment seeking. Specifically, attributing one's symptoms to a psychological disorder may be a critical predictor of whether, or not, they seek mental health treatment (Eells et al., 2005). Perhaps equally (if not more) problematic is the possibility that these erroneous attributions to personality are made by trained therapists, which could reduce the likelihood that problematic symptomatic behaviors are targeted in the treatment plan. In other words, if symptoms are perceived as stable personality traits, they may be overlooked by therapists when developing the therapeutic treatment plan.

The role of implicit theories of personality on social stigma

The causal attribution of behaviors to personality or the context is associated with other implicit theories about personality. Some people believe that personality and individual attributes are fixed (entity theory) and focus primarily on identifying stable personality traits, which favors global dispositional inferences about the self and others and subsequent judgments and decisions based on those dispositional inferences. However, other people have the belief that personality is malleable (incremental theory) and focus on understanding social situations and their impact on the individual state, thus leading to specific, conditional and context-sensitive inferences about the self and others (Dweck, 2008; Dweck, et al., 1995). People with an incremental theory of personality weight less the individual attributes and give higher importance to the context or to the interaction between the individual and the context when explaining people's behavior (see Levy, et al., 1999) than do people with an entity theory of personality. In other words, believing that personality is malleable favors attributing behaviors to the context.

The role of beliefs about personality has also been demonstrated in research comparing person perception and causal attributions in different cultures. For instance, it has been robustly shown that western culture is associated with higher dispositional inferences (dispositionalism) than eastern culture, which is associated with higher attributions to the situational factors (situationalism) (see Fiske, et al., 1998; Markus & Kitayama, 1991). This cultural difference seems to be explained by the difference in the use of contextual factors to adjust the initial automatic dispositional inference. Choi and colleagues (1998) in their review of the literature, conclude that although both western and eastern cultures value personality and individual attributes and make similar dispositional inferences,

eastern culture favors the further use of contextual norms and constraints or social roles to explain behavior (i.e, as a correction), after a dispositional inference is made (Choi, et al., 1998).

It is noteworthy that the tendency to interpret behaviors as being personality driven, rather than explained by the context, is exacerbated when individuals evaluate outgroup members (e.g., Allison & Messick, 1985; Hewstone, 1990; Fiske & Neuberg, 1990; Levy et al., 2001; Pettigrew, 1979). Moreover, intergroup bias interacts with implicit theories of personality, which may increase prejudice expressions, as shown in a study focused on understanding prejudice and stigma against the outgroup of fat people in individualist and collectivist cultures (Crandall et al., 2001). In individualist cultures, which value individuals and their attributes, people made more dispositional inferences about the fat outgroup. On the other hand, in collectivist cultures, which value social roles and norms, context was used to explain people's behavior, leading to fewer dispositional inferences about the fat outgroup. This study demonstrated that individualist cultures, by favoring the attribution to the individuals, held more prejudice towards fat people (Crandall et al., 2001).

In sum, research suggests that implicit lay beliefs about human behavior and the groups to whom individuals belong influence the extent to which people attribute behaviors to personality and/or the context. In the present research, we highlight that mental illness is a condition that is associated with specific beliefs that may lead to high prejudice and stigma.

The role of mental illness beliefs in person perception and decision making

Understanding the processes underlying clinical judgments about symptoms and psychological disorder diagnosis requires understanding the underlying beliefs, lay and professional theories, about mental illness (Corrigan, 2000). This is especially relevant because people diagnosed with a psychological disorder are often perceived as outgroup members and victims of prejudice and stigma (Corrigan, 2005; Hinshaw, 2006). Generally, public stigma towards people with mental illness include beliefs that mental illness is an uncommon condition and that stigmatized people are dangerous, violent, and incompetent to make decisions about their life and treatment (Feldman & Crandall, 2007; Patrick & Corrigan, 2002; Pescosolido, et al., 1999).

Research on mental illness stigma has focused on several dimensions of prejudice expression, from the signaling features, to cognitive mediators and behavioral responses (e.g., Corrigan, 1998, 2000). Research efforts to understand the consequences of mental illness stigma describe the impact of causal beliefs about behavior stability and controllability as determinants of stigma responses, such as social rejection or blaming (e.g., Corrigan, 2000; Hegarthy & Model, 2008; Weiner, 1985, Weiner, et al., 1988). Specifically, research has demonstrated that perceiving the stigmatizing condition as controllable – i.e., that the person with the stigmatizing condition is responsible for that condition –

increases stigma towards people with mental illness (Crandall & Moriarty, 1995; Meyerowitz, et al., 1987, Schwarzer & Weiner, 1991). For instance, the perception that a stigmatizing condition was controllable, such as the perceived lack of self-regulation in obesity conditions, led to higher social rejection compared to conditions that were perceived to be uncontrollable, such as AIDS (Schwarzer & Weiner, 1991; Turk, et al., 1986; Weiner, et al., 1988). Accordingly, research focused on understanding the processes underlying mental illness stigma has demonstrated that beliefs about the controllability and stability of the stigmatizing condition also explain prejudice towards people labelled with a mental illness diagnosis (see Corrigan, 2000; Crandall & Moriarty, 1995). Mental illness is perceived to be stable across time (see Corrigan 2000), and, in general, causes of behavior perceived to be stable and unchanging are given more weight (Weiner, 1985, 1995). This leads to the hypothesis that believing mental illness is fixed would lead to higher dispositional inferences. However, the belief that mental illness is stable seems to contrast with the belief that mental illness is controllable, which implies the behavior should be changeable, and thus should lead to less stigma.

Moreover, contrary to what research on mental illness stigma has assumed, stigma related beliefs vary across several mental illnesses (e.g., depression, schizophrenia) (Krendl & Freeman, 2017). Interestingly, people suffering from depression are perceived to have more control of their condition, compared to people with other mental illnesses, which, combined with low social desirability, predicts high prejudice and stigma against depressed people (Krendl & Freeman, 2017). Research is still inconclusive regarding the role of causal beliefs associated to mental illness in general and specific psychological disorders. Research focused on the comparison of four models of stigma reduction based on causal attribution (Rusch, et al., 2009) also emphasizes the role of causal beliefs. The study compares the reduction of depression stigma in a sample of undergraduate students in four conditions, corresponding to four programs: 1) contextual program – focused on the social contextual factors of depression, such as negative events or relationships; 2) biomedical program – focused on attributing depression symptoms to chemical imbalances of the individual; 3) control program – acknowledging the severe impact of depression stigma, without focusing on causes; and 4) no-program control. This study found that both the contextual program and control program reduced depression stigma more than the no-program control, but this difference was not found for the biomedical program. Interestingly, they also found that the biomedical program showed reductions in depression stigma only in participants with extant beliefs that depression was caused by a chemical imbalance, which matched the program information. The benefits of contextual and control programs were independent of previous beliefs (Rusch, et al., 2009). This study, despite being inconclusive about the mechanisms underlying stigma change, suggests that attributing depression to a situational cause and increasing empathy to the sufferer (as it may have occurred in the that acknowledges the impact of Depression) reduced stigma towards depression. However, the solution of decreasing impressions of controllability

may not be optimal, since attributing symptoms to chemical imbalance may increase perceived stability, thus increasing other stigmatizing attitudes and behaviors, such as prognosis pessimism and helplessness (Lebowitz, et al., 2013).

It is noteworthy that there have been many efforts to reduce mental illness stigma. A meta-analysis reviewing the results of 79 independent studies aimed at reducing mental illness stigma found that interventions based on providing education and contact with people with the stigmatizing condition promoted attitude change and reduced prejudice (Corrigan, et al., 2012). Of interest for the present research is that in the 79 studies analysed, outcome measures were attitudes (mostly trait inferences), affect (proxies of fear and anger) and behavioral intentions (mostly avoidance). The studies did not include measures based on decisions about people with mental illness. Hence the present research is aimed at understanding causal attribution in mental illness stigma, and further, exploring how individuals apply their related stigma beliefs about mental illness in a context of person perception, suffering perception and life decisions.

Overview of the empirical chapters

In chapter three, we advance the study of therapists' intuitive judgments about clients in the specific task of diagnostic inference. More specifically, our goal is to explore and better understand the process of hypothesis generation and testing in the context of the clinical therapy session, where it is hard to use deliberate and analytical judgment and decision processes. In four studies, we present to participants session records, in audio format, from two fictitious clients describing symptoms of a psychological disorder. We manipulate task decomposability to explore the underlying hypothesis testing strategies.

In chapter four, we explore how dispositional inferences are adjusted when the account for a behavior is a psychological disorder diagnosis. We test whether the psychological disorder diagnosis leads to the same trait inference adjustment as a condition of physical impairment does. In six studies, we present participants short vignettes that lead to automatic trait inferences and compare trait ratings when the account of the behavior is a psychological disorder and when it is physical impairment condition.

In chapter five, we focus on understanding the mechanisms underlying stigma toward mental illness. Specifically, we explore how the attribution of mental illness and psychological suffering to an account of psychological trauma leads to higher trait inferences of incompetence and higher stigma expression in life decisions, in comparison with an account of physical impairment.

In chapter six, we discuss further limitations and theoretical contributions of our studies, and the implications of our results for clinical training and practice.

In chapter seven, we propose new directions for future research that would allow better understanding of how to improve clinical judgments, given the biased reasoning tendencies people fall prey to, focusing on the conditions that may lead to higher and lower confirmatory tendencies in clinical judgments and discussing in which circumstances confirmatory tendencies may be used in psychotherapy's benefit.

Chapter 2 – A conceptual model for generating and validating in-session clinical judgments

This theoretical chapter corresponds to a published manuscript.

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Abstract

Little attention has been paid to the nuanced and complex decisions made in the clinical session context and how these decisions influence therapy effectiveness. Despite decades of research on the dual-processing systems, it remains unclear when and how intuitive and analytical reasoning influence the direction of the clinical session. This paper puts forth a testable conceptual model, guided by an interdisciplinary integration of the literature, that posits that the clinical session context moderates the use of intuitive versus analytical reasoning. A synthesis of studies examining professional best practices in clinical decision-making, empirical evidence from clinical judgment research, and the application of decision science theories indicate that intuitive and analytical reasoning may have profoundly different impacts on clinical practice and outcomes. The proposed model is discussed with respect to its implications for clinical practice and future research.

Keywords: clinical judgments; case conceptualization; psychotherapy; cognitive processes; intuitive reasoning; analytical reasoning; hypothesis generation; hypothesis testing

The Unresolved Debate: Intuitive versus Analytical Judgment Methods

The efforts to compare and distinguish between intuitive and analytical judgment methods can be dated back to Meehl's (1954) first use of the terms clinical and statistical methods, in which Meehl demonstrated that predictions of psychological variables made by mathematical models were superior to predictions made by clinical intuition (see also Dawes, 1979). Decades of decision science research have since discussed the existence of a dual-processing system (e.g., Evans & Stanovich, 2013; Ferreira, Garcia-Marques, Sherman, & Sherman, 2006; James, 1890; Kahneman & Frederick, 2002, 2005; Kruglanski & Gigerenzer, 2011). Specifically, the dual process models of judgment and decision-making distinguish between Type 1 or Intuitive ("clinical" per Meehl)—processes that are rapid, automatic, high capacity, and occurring outside of one's awareness, and Type 2 or Analytical

("statistical" per Meehl)—processes that are slow, deliberate, and occurring in the context of active awareness and engagement (Bargh & Chartrand, 1999; Evans, 2008; Haidt, 2001; Kahneman & Frederick, 2002, 2005; Sloman, 1996, 2002; Stanovich, 1999). Although the relation between these two systems is still under discussion (e.g., Evans & Stanovich, 2013; Kruglanski & Gigerenzer, 2011), it is clear that judgments and decisions may require different levels of cognitive complexity. Literature has relied on this distinction to reify that different characteristics, predictors, moderators, mediators, and outcomes of intuitive and analytical processes can be explored. This parsimonious approach to examining judgment methods (analytical and intuitive) may ultimately reveal nuances about which to use when, with what else, how, and for what purpose. Several studies compared the accuracy of intuitive and analytical judgment methods. In these studies, accuracy is defined according to the specific task presented to participants in each study in which the researchers have defined a correct and incorrect outcome. For instance, in a meta-analysis focusing on the comparison of human intuitive judgments and models of analytical reasoning methods, researchers concluded that despite human capacity for sound judgment and decision-making, mathematical analytical models seem to be more accurate (Karelaia & Hogarth, 2008). Conversely, some decision science studies have emphasized that complex choices actually benefit from intuitive reasoning methods (e.g., Dijksterhuis, Bos, Nordgren, & von Baaren, 2006; Gigerenzer & Gaissmaier, 2011). These contrasting results may suggest that the merits of intuitive and analytical judgment methods depend on the conditions and contexts in which they are used (e.g., Kahneman & Klein, 2009). This means one judgment method is not always better than the other.

Clinical psychological research on the accuracy of intuitive and analytic methods is similarly equivocal in nature. Therapists are charged with making clinical judgments both during and between clinical sessions. Clinical judgments are defined as any judgment and/or decision made by the therapist about the client and/or the case during the therapy process. These judgments may be driven by both

intentional and formal reasoning tasks as well as spontaneous decisions. Intentional and formal reasoning is most likely to be employed for diagnosis, case formulation, and treatment planning (among others, see Garb, 2005), as the therapist is likely to be aware that a judgment process is taking place during these tasks (see Bargh & Ferguson, 2000; Wegner & Bargh, 1998). Simultaneously, clinical judgments can also be spontaneous and intuitive decisions in circumstances where the therapist is not acutely aware that a specific judgment process is being made. For example, when the therapist associates a coping strategy used by the client in a past situation to the client's description of an episode in a different context. Each type of judgment, more intentional or more spontaneous, is governed by different processes (analytical and intuitive) that capitalize on different information, and may result in more or less optimal outcomes, according to the circumstances in which they occur.

Important insights on the accuracy of intuition have emerged from naturalistic studies of professionals charged with making difficult decisions in complex clinical contexts (Klein, 2008; Lipshitz, Klein, Orasanu, & Salas, 2001). However, the majority of clinical decision-making research has focused on clinical judgments or decisions that are made outside the therapy session, such as making a diagnosis or conceptualizing a case (Garb, 2005). For instance, De Vries and colleagues found that the intuitive processing of case descriptions from

the DSM-IV casebook resulted in significantly more correct diagnoses than the analytical processing of the same descriptions (De Vries, Witteman, Holland, & Dijksterhuis, 2010). Conversely, a recent randomized clinical trial indicates that modular approaches to evidence-based practice (EBP) implementation outperform treatment as usual and standardized protocol implementation when guided by clinical decision aids that enable analytical reasoning (Weisz et al., 2012). A meta-analysis of 136 psychotherapy studies revealed that judgments relying on therapist subjectivity were approximately as accurate as analytical predictions (Grove, Zald, Lebow, Snitz, & Nelson, 2000). Perhaps the most appropriate conclusion to draw is that one judgment method may be more appropriate and effective when conducted by particular individuals in certain circumstances. Simultaneously, it is important to acknowledge that, contrary to the fundamental studies in which accuracy is clearly defined, in many cases there is no one correct outcome or decision, particularly in clinical practice. Thus, it may be most useful for clinical judgment research to focus on the processes through which judgments are made, the impact these judgments may have on subsequent therapist behaviors, and ultimately client outcomes.

Understanding the cognitive processes that underlie judgment methods and associated outcomes may be critical to optimizing clinical care and focusing future research. Therefore, the overarching goal of this paper is to put forth an integrated conceptual model of clinical decision-making that interfaces two fields of psychological science (decision and clinical science) to enrich our understanding of the clinical judgment processes and to stimulate future research. Although this model may serve to inform

clinical decision-making in a broad sense, the focus on judgments made by therapists within the clinical session is a critical but understudied component of effective therapy delivery. In order to advance the science and practice of psychotherapy, it is necessary to illuminate the nuances of each judgment method by: (a) articulating individual factors that may influence the use and utility of each judgment method; (b) exploring the clinical conditions (context and task characteristics) in which each judgment method may be more or less used; (c) characterizing the main cognitive processes that underlie the use of intuitive versus analytical methods in clinical judgments (hypothesis generation process); and (d) highlighting the impact that intuitive versus analytical methods may have on information seeking strategies and clinical judgment validation.

As a brief overview, the model proposes that therapists have a dispositional thinking style and unique set of experiences (Figure 1 Box 1: Therapist Factors) that may function as predictors and

influence their propensity to use of either intuitive or analytical judgment methods. Next, the model conceptualizes the judgment context (between session or in session) as a moderator of the judgment method used (Box 2). That is, use of intuitive or analytical judgment methods likely depends on the context and task characteristics. Specifically, the context between sessions encourages the use of an analytical judgment method, whereas the in-session context, due to the session's characteristics, limits its use, therefore favoring an intuitive judgment method. Subsequently, the model illuminates judgment methods (analytical and intuitive) as cognitive judgment processes underlying the generation of clinical hypotheses that may lead to different outcomes (Box 3). Finally, the judgment method and the associated judgment outcome will mediate the therapist's information seeking process, which therefore will influence the process of hypotheses testing and ultimately the validation of the clinical judgments made. In this model it can be predicted that the context between sessions, with its propensity for the use of an analytical judgment method, invites the use of a disconfirmatory validation strategy (tendency to search for information that attempts to falsify/ refute the hypotheses). Conversely, the in-session

context with its propensity for use of an intuitive judgment method favors a confirmatory validation strategy (tendency to search for information that attempts to confirm the hypotheses) (Box 4). Ultimately, the validation of clinical judgments (Box 4) may reveal new hypotheses that can be subsequently tested and incorporated, for instance, into the case conceptualization. Figure 1 depicts the conceptual model, each component of which and their relations will be presented in sections according to the four aforementioned foci. The manuscript ends with propositions and associated recommendations for future research and clinical practice.

Therapist Factors that Influence the Use and Utility of Judgment Methods (Box 1)

General thinking style. Clinical judgment methods tend to be consistent within individuals but different across therapists (Falvey, 2001). For instance, outcomes for case formulation and treatment planning are relatively consistent both within and across cases for individual therapists, but not within or across groups of therapists (Falvey, 2001). This suggests that individual variables, such as a general thinking style, may contribute to the judgment method used by therapists. General thinking style is conceptualized as a dispositional individual variable (personality trait) that manifests in a preference for a particular way of processing information and distinguishes between experiential and rational thinking styles, which are associated with intuitive and analytical reasoning, respectively (Epstein, Pacini, Denes-Raj, & Heier, 1996; Pacini & Epstein, 1999; Stanovich & West, 2000). For instance, accuracy in diagnostic tasks was found to be negatively associated with a rational (analytical) thinking style (Aarts, Witteman, Souren, & Egger, 2012). Thinking style has also been shown to influence the willingness of therapists to use EBPs, as therapists with more rational (analytical) thinking styles were more willing to use EBPs (Gaudiano, Brown, & Miller, 2011). Other dispositional individual variables have also been shown to be important for judgment and decision processes, being, the need for cognition. The need for cognition is the extent in which one engages in and shows preference for effortful thinking tasks (Cacioppo & Petty, 1982) or the need for closure, which refers to the desire for an end state of a cognitive task, regardless of the cognitive strategy and effort put into that task (Webster & Kruglanski, 1994). Thus, in addition to other social and interpersonal variables that may influence the judgment method used (e.g., Ackerman & Hilsenroth, 2001, 2003), these individual thinking variables may be critical to understanding clinical decision-making and its effect on therapy outcomes.

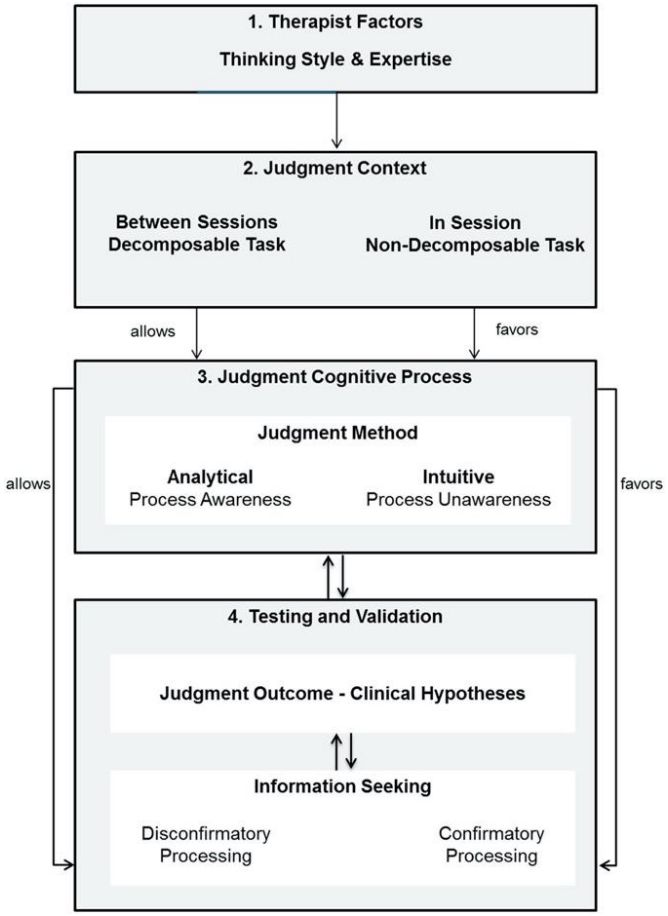

Figure 1. A conceptual model for understanding in-session clinical judgments.

Experience and expertise

The extant literature has shown that when individuals have expertise, the use of intuitive decision methods may lead to more accurate results when compared to analytical approaches (e.g., Dane, Rockmann, & Pratt, 2012; Klein, 1999; Klein & Calderwood, 1991). In the proposed model, we define expertise as resulting from the acquisition of tacit knowledge, over time, with experience, upon which we draw in making inferences (Hogarth, 2010). Thus, expertise in a specific task/ context is expected to lead to better performances and outcomes when the feedback from the experience provides the knowledge that allows improvement (Hogarth, 2010; Tracey, Wampold, Lichtenberg, & Goodyear, 2014). Gaining experience allows experts to use acquired knowledge automatically when presented with a situation similar to one they have previously experienced (e.g., Hogarth, 2010; Reyna, 2004). However, this process can break down when there is poor feedback from the environment (Hogarth, 2001) or when a novel situation occurs in clinical practice (Reyna, 2004). For instance, experienced therapists often fail to perform better than novices in diagnostic decision-making (Garb, 2005; Strasser

& Gruber, 2004; Witteman & Tollenaar, 2012; Witteman & Van den Bercken, 2007) despite their ability to process information from previous diagnostic tasks (Marsh & Ahn, 2012; Witteman & Tollenaar, 2012). A recent critical review reaffirms the limitations of therapists to learn from the feedback they get in their past clinical experiences making intuitive processing suboptimal even when therapists are experienced (see Tracey et al., 2014).

Context and Task Characteristics Affect the Judgment Method Used (Box 2)

Clinical judgments demand the confluence of information about a client presented in different formats and from different sources, including theoretical information (e.g., conceptualizing the client's maladjustment as a function of cognitive or behavioral processes as in Cognitive Behavioral Therapy, or as a function of ego defense mechanisms as in Psychodynamic Therapy), empirical information (e.g., data from a self-report assessments), and information from the therapist's past experiences (e.g., past history of treating anxiety; Eells, 2011). Additionally, the therapist must consider information regarding emotional (e.g., client's level of distress) and culturally relevant content (e.g., client's cultural background and values), which further increases the level of information complexity. All of this information is obtained and considered in different judgment contexts both during and between therapy sessions.

The context in which a judgment task occurs is a key factor that has been shown to differentially influence judgment methods (intuitive and/or analytical; Hammond, Hamm, Grassia, & Pearson, 1987). Tasks that occur between sessions can be viewed as fundamentally different from tasks that occur in session because of the context characteristics (e.g., time, cognitive complexity of the task, information available). Research suggests that decomposable tasks, defined as tasks that can be decomposed into smaller parts and approached sequentially in a deliberate process, tend to be conducive to analytical reasoning (see Hammond et al., 1987). As an example, conferring a diagnosis can be viewed as a decomposable task in which the therapist presumably has access to client endorsement of symptoms (often obtained in an interview) that can be sequentially mapped onto the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM–5; American Psychiatric Association, 2013), and is typically concluded in a time/place outside of client contact. Conversely, non-decomposable tasks, which cannot be easily decomposed into smaller parts and do not have an obvious sequence, are more suited to intuitive methods (e.g., Hammond et al., 1987) (see Figure 1 Box 2 for a simplified representation of these concepts). To illustrate, within a therapy session, a client may present to session very distraught about the recent death of her daughter and the decision to provide emotional support versus conduct a risk assessment cannot be easily decomposed into steps and approached sequentially. Although the decomposition of this decision task is not impossible, interrupting the

session to sequentially analyze all the factors and to methodically consider theoretical and empirical information to aid in decision-making requires significant effort and may be overwhelmingly difficult to achieve.

Therefore, our model considers the clinical session as a context in which tasks are not often easily decomposed. That is, given the complexity of the session context, therapists are unlikely to engage in an analytical judgment method that involves (a) decomposing clinical tasks into smaller parts; (b) defining sequential steps for making judgments; (c) considering information available from the client, theory, past experiences, etc.; and, (d) assessing and distinguishing relevant and irrelevant information (Dane et al., 2012; Hogarth, 2010). Although some therapeutic approaches delineate discrete tasks within a clinical session (e.g., Cognitive Behavioral Therapy, Interpersonal Psychotherapy), the judgments made within these tasks cannot easily be decomposed into sequential subparts in the moment. The complexity of the clinical session context may favor the use of intuitive decision methods even though the therapist's lack of awareness and control that characterizes this type of judgment method may compromise the outcome (see Hogarth, 2010).

Cognitive Processes Underlying Clinical Judgments (Box 3)

However, much of the judgment and decision-making literature in clinical psychological science has focused on intentional and deliberate clinical tasks that typically occur between sessions, and can be considered decomposable tasks (see Garb, 2005; Grove et al., 2000). Garb (2005) identified five types of clinical tasks that tend to favor and may benefit from analytical reasoning: (a) description of personality and psychopathology, (a) diagnosis, (c) case formulation, (d) behavioral predictions, and (e) treatment decisions. For these tasks, the therapist is making intentional judgments about the case in a context outside of direct client contact; therefore, the therapist is likely aware that the diagnosis or case conceptualization is the result of an analytical reasoning method (e.g., Bargh & Ferguson, 2000; Wegner & Bargh, 1998). Some literature has suggested that people can use explicit reasoning rules, be aware of the information used and weigh different pieces of information in their judgments when cognitive and attentional resources are available (e.g., Rieskamp & Hoffrage, 2008). There is a dearth of research exploring the complexity of the clinical session context and how this context influences the clinical judgment methods used. This is unfortunate because the face-to-face time between the therapist and client in the clinical session presents contextual constraints that do not exist while a therapist is developing a case conceptualization or assigning a diagnosis between sessions. Therapists are required to make within-session clinical judgments and decisions under time constraints, productivity pressure, and while considering emotional and relational factors, all of which add to the complex and demanding nature of clinical interactions and likely promote the use of intuitive reasoning

(see Klein, 1993, for other examples of decision-making demands in real-world settings). In contexts such as the clinical session, even when the therapist is intentionally and actively engaged in using an analytical judgment method, the context complexity favors automatic, fast, and uncontrolled judgments (intuitive) in which the therapist is less aware of the information used to make the judgment. Unfortunately, with the mental healthcare more often focused on service quantity, as opposed to quality (at least within the United States), this may have important implications for clinical practice outcomes. Thus, it is very important to maximize the fit of therapist's judgments to client's circumstances and needs, in order to maximize therapy effectiveness.

As an example, many therapists are required to conduct risk assessments with clients who have expressed suicidal ideation. This task typically occurs within a time-sensitive context with high emotional valence and requires the therapist to consider multiple decisions that could result in aversive safety and legal consequences if not handled correctly. In this context, the therapist makes multiple judgments, including which questions to ask and which to ignore, in order to gain a comprehensive understanding of the client's experience and capacity to remain safe. In these circumstances, the therapist may be aware that decisions are being made, particularly if she has access to decision aids (e.g., reliable and valid suicidality risk assessments; Columbia Suicide Severity Rating Scale; Posner et al., 2011). However, the therapist may not be aware of the details inherent to the judgment method employed. For instance, the therapist may struggle to identify which pieces of information were considered and which were ignored, what process guided the categorization of data (important versus non-important) and subsequent inquiry, and what causal explanations for the acuity of the risk were engaged, disregarded or missed altogether. Even with access to specific guidelines for conducting a risk assessment, there are contextual constraints that challenge the therapist's capacity to use analytical reasoning (see Evans, 2008; Hammond, 1996; Hammond et al., 1987; see Hogarth, 2010 for a review). In the worst-case scenario, lack of control, contextual and task constraints, and cognitive load may negatively impact the quality of judgments made and result in a potentially dangerous outcome for the client (e.g., Garb, 2005).

Although the decision context illustrated above (suicidal risk assessment) is unlikely to occur in each clinical session with every client, tasks in which the therapist is unaware of her judgment processes are indeed present in every clinical session. As another example, consider a therapist who is actively working with a client on developing a collaborative therapeutic relationship. In a clinical session, the therapist may be curious about the client's perspective on the role of a collaborative alliance to psychotherapy outcome and on the client's experience in psychotherapy which leads to intentional information gathering. However, this intentional decision of gathering information may be accompanied by specific automatic (intuitive) judgments about what information should be collected (e.g., which client emotions to attend to, which therapist's skill to employ to assess psychotherapy

impact on client's feelings) or how to order the questions (e.g. to first address client's experience overall and then drill down to specific topics, or vice versa; see Elliott & Wexler, 1994). As such, the process of selecting information relevant to the therapist's curiosity within the clinical session is likely a judgment made using an automatic or intuitive process that occurs with little therapist awareness (e.g., Bargh & Ferguson, 2000). The therapist may note that the client is presenting contradictory information about her experience of the session and may then make a judgment about how to proceed with little awareness of the process underlying that judgment. Faced with this contradictory information, the therapist can choose to (a) emphasize the information that supports the client's ideas about the session, (b) emphasize information that contradicts the client's initial perspective, (c) highlight both aspects of the contradictory information, or (d) disregard the information altogether. Regardless of the therapist's decision in this example, a clinical judgment is made that guides the flow of the session, the outcome of which may drive subsequent clinical work. This is a prime example of an intuitive reasoning process that may invoke little awareness by the therapist that a judgment is being made (see Hogarth, 2010). The lack of awareness may prevent the therapist from revising the judgment, as it is difficult to unpack what information was considered and disregarded in order to make the judgment. In other words, not being aware of the judgment method prevents further judgment validation, which may compromise therapy effectiveness (see Garb, 1998; Persons & Bertagnolli, 1999). In Figure 1, in the interaction between Boxes 2 and 3, we present a simplification of the interaction between the contexts where the clinical judgment occurs and the two judgment methods, analytical and intuitive. This judgment process results in a judgment outcome, or in other words, a clinical hypothesis that can then be tested/validated (see Box 4), which will be developed in the following sections.

Clinical judgments as testable hypotheses. Persons, Beckner, and Tompkins (2013) assert that the process of testing clinical judgments is essential for optimizing therapy effectiveness primarily because it allows for therapists to validate case conceptualizations. Following a different approach, Schön (1983) identifies the implicit and tacit knowledge underlying therapists' judgments that may fall outside of the therapists' awareness. Accordingly, he proposes a reflective practice in which a deliberate analysis of thoughts, actions and feelings may inform subsequent clinical work and lead to clinical judgment adaptations. There is literature to suggest that it may be helpful to highlight the goal of causal reasoning for therapists engaged in clinical practice as making underlying clinical goals (causal explanations or predictions) more salient, which allows therapists to use controlled and deliberate reasoning in their judgments (Arnoult & Anderson, 1988; Strohmer, Shivy, & Chiodo, 1990).

This hypothesis formulation and testing process is clearly not a new idea. Several researchers have proposed that testing one's clinical hypotheses is analogous to the scientific method where the goal is to focus on observation, hypothesis generation, and testing (Apel, 2011; Hayes, Barlow, & NelsonGray,

1999). To present a definition, hypothesis generation involves using data to formulate a judgment (making an inference) about a theme or idea. The hypothesis generated may subsequently lead to the hypothesis testing in which the hypothesis is tested in terms of its veracity by gathering evidence that either supports it or not (e.g., Thomas, Dougherty, Sprenger, & Harbison, 2008). Although no experimental studies, to our knowledge, have directly tested the effect of therapists' use of the scientific method in practice, support for the effectiveness of this approach can be drawn from recent research. Specifically, mounting research suggests that therapists' receipt of ongoing feedback regarding client progress enhances outcomes for clients demonstrating a negative response to treatment and increases the number of clients who respond to treatment (Lambert, Harmon, Slade, Whipple, & Hawkins, 2005). Typically, this feedback is provided to therapists in an automated fashion (e.g., using a measurement feedback system; e.g., Garland, Bickman, & Chorpita, 2010; Kelley & Bickman, 2009) and contains individual client item responses and summary scores from standardized symptom and functioning measures that inform clinical decision-making (e.g., Duncan et al., 2003; Lambert et al., 2001; Miller, Duncan, Brown, Sparks, & Claud, 2003). Although there is a dearth of literature delineating the mechanisms through which feedback exerts its effect, one possible pathway is that automated feedback brings empirical data into the therapist's awareness, thus encouraging a direct test of generated hypotheses. Indeed, in one of the only papers exploring feedback mechanisms of change in psychotherapy context, Connolly Gibbons et al. (2015) found that therapists randomized to the feedback intervention were significantly more likely to address a wider range of relevant content (e.g., emotional issues, family issues, client hope for future) more quickly in the therapeutic process as compared to therapists in the no feedback intervention condition. The authors interpret these findings in a manner that suggests therapists receiving feedback may be more attuned to issues most important to clients.

There are currently efforts underway to determine how best to integrate feedback to guide psychotherapist practice (e.g., Lambert et al., 2001, 2002, Sundet, 2011; see Sundet, 2012 for a review) and to implement what is often referred to as "measurement-based care" in large community mental health centers (Lewis et al., 2015). For instance, humanistic psychotherapy research focused on the role of different types of session outcomes, such as a session's helpfulness, depth and smoothness, as immediate feedback for therapists. This literature, has demonstrated the impact of linking the therapist's and client's experience in session to therapist's specific interventions in that same session (e.g., Elliott & Wexler, 1994; Hill et al., 1988). As another example, the Case Formulation-Driven Approach put forth by Persons, Bostrom, & Bertagnolli (2013) advocates for developing and testing clinical hypotheses in order to optimize the fit of the case conceptualization, which is meant to guide therapy sessions and treatment planning. Findings from naturalistic studies indicate superior outcomes for this case formulation-based approach (reduction in depressive symptomatology) when

compared to treatment that was not guided by a testable formulation (Persons, Bostrom, & Bertagnolli, 1999). In sum, elevating causal reasoning and associated inferences in the therapists' awareness may serve as a pathway to optimize the work accomplished in the clinical session where intuitive judgment methods are favored.

The Impact of Judgment Methods on Clinical Judgment Validation (Box 4)

Inherent to the process of generating and testing clinical inferences (i.e., hypotheses) is subsequent information seeking, which can be defined as the process of gathering information by asking questions or seeking information in order to acquire more knowledge about a theme or an idea (e.g., Skov & Sherman, 1986). Applying this definition to the clinical session context in the proposed model, information seeking consists of the process of intentional collection of additional information by, for example, inquiring about or exploring an idea or situation that the client or therapist consider relevant for the therapy session. Unfortunately, little research is available that has directly tested the effect of therapist information seeking behavior on treatment effectiveness, and the research that does exist has traditionally focused on formal information collection (e.g., a structured interview to assign a diagnosis; Garb, 2005). Moreover, the cognitive processes involved in information seeking have not been adequately considered as part of the complex task of information interpretation in previous work (e.g., Dawes, Faust, & Meehl, 1989).

These two processes (information collection and information interpretation) occur through a dynamic interplay (Glöckner & Witteman, 2010) in which generated hypotheses guide information seeking that will lead to new hypotheses and interpretations and ultimately additional information seeking processes (e.g., Elstein & Schwarz, 2002; Radecki & Jaccard, 1995; Thomas et al., 2008; Weber, Böckenholt, Hilton, & Wallace, 1993). For instance, a therapist may generate the hypothesis that avoidant coping strategies are maintaining the client's social anxiety symptoms. To test this hypothesis, the therapist may seek information about coping strategies and how the client currently employs them. This information seeking process allows the therapist to generate alternative hypotheses about the symptoms in order to promote additional information seeking and hypothesis validation. With a larger number of testable hypotheses available, both case conceptualization accuracy and therapy effectiveness are likely to be increased (Thomas et al., 2008). Thus, it is crucial to understand the mechanisms underlying hypothesis generation and testing processes in order to fully appreciate their effect on subsequent information seeking within the context of in-session clinical judgments. As depicted in Figure 1, the clinical judgment validation process is conceptualized as a constant process of re-validating the generated hypotheses through seeking information that will allow the therapist to adapt to the client's specific situation.

Biases in hypothesis testing and validation. However, the ease and automaticity with which intuitive judgments are made may elicit a metacognitive reflection of confidence in the initial judgment, described in the literature as a subjective feeling of rightness (FOR; Thompson, Prowse Turner, & Pennycook, 2011). In other words, therapists likely feel confident in their judgments when using intuitive reasoning, and therefore perceive judgment outcomes as valid (Thompson, 2009, 2010). This sense of validity may subsequently result in fewer hypotheses and limited information seeking. This is in part because therapists (and humans in general) have the tendency to look for, favor, or interpret information in support of a generated hypothesis regardless of its accuracy in a process known as "confirmatory bias" (e.g., Nickerson, 1998).

Thomas et al. (2008) recently termed this process of seeking information as the hypothesis-guided search process. According to their model, the generation of a single hypothesis guides the information seeking process to be confirmatory in nature. In this case, a therapist may hypothesize that a client's depressive symptoms (e.g., lack of energy, anhedonia) are maintaining a client's social isolation behaviors, and the therapist may confirm this hypothesis by observing that the client does not engage in social events and reports feeling worse as a result. However, the therapist may have failed to consider the alternative hypothesis that the client is actually struggling with social anxiety and his fears of negative evaluation keep him from attending campus social events. Several factors, as briefly described below, may contribute to the tendency to draw biased confirmatory conclusions during the hypothesis testing process (e.g., Klayman & Ha, 1987).

There are at least three primary methods by which individuals attempt to access information necessary to test hypotheses (e.g., Nickerson, 1998). First, individuals may seek evidence by searching their memory for relevant data (e.g., Kunda, 1990), which may include the therapist's memories of past experiences with other clients. Second, individuals may look for external sources of data through direct observations or by creating situations intended to elicit relevant behavior (e.g., Frey, 1986; Hilton & Darley, 1991; Swann, 1990). In this case, a therapist may administer a standardized assessment to a client in order to elicit specific relevant responses from the client. Third, individuals may use more indirect procedures such as formulating questions (see e.g., Devine, Hirt, & Gehrke, 1990; Hodgins & Zuckerman, 1993; Skov & Sherman, 1986; Snyder & Swann, 1978; Trope & Bassok, 1982, 1983; Trope & Thompson, 1997) that allow a therapist to engage in clinical inquiry with a client. These three methods of seeking information may be employed to inform clinical judgments both in formal clinical tasks (e.g., in making a diagnosis between sessions) or informally (e.g., in the clinical session).

Regardless of the method used for seeking information, it has been repeatedly demonstrated that individuals primarily seek information that confirms their existing hypotheses (Doherty & Mynatt, 1990; Klayman & Ha, 1987; Nickerson, 1998). Many social cognition studies suggest that when testing

hypotheses about another person's personality (e.g., that an individual is introverted), people tend to generate questions that inquire about behaviors consistent with the hypothesized trait (introverted behaviors) rather than with the alternative trait (extroverted behaviors; Devine et al., 1990; Evett, Devine, Hirt, & Price, 1994; Hodgins & Zuckerman, 1993; Skov & Sherman, 1986; Snyder & Swann, 1978). Additionally, retrieval of evidence from memory appears to be similarly biased in favor of

confirming hypotheses (see Koehler, 1991). The presence of ambiguous information also frequently results in interpretations that are consistent with a generated hypothesis (e.g., Darley & Gross, 1983). For instance, observers looking for signs of anger to test their hypothesis that an individual is hostile may interpret pranks and practical jokes as displays of anger rather than as humorous acts (Trope, 1986). Moreover, studies of social judgment also provide evidence that people tend to overemphasize positive confirmatory evidence or underemphasize negative disconfirmatory evidence. Specifically, individuals generally require less hypothesis-consistent evidence in order to accept a hypothesis than they require hypothesis-inconsistent information to reject a hypothesis (Pyszczynski & Greenberg, 1987), and data consistent with the hypothesis is weighted more strongly (e.g., as a result of a theory guiding the hypothesis) than data that is not consistent (Zuckerman, Knee, Hodgins, & Miyake, 1995).

In the proposed model it is depicted that a confirmatory strategy of information seeking can be employed using either analytical or intuitive judgment methods. However, similar to the idea that the in-session clinical context favors an intuitive judgment method, this context also favors a confirmatory information seeking strategy. Conversely, the between-session clinical context, that carries with it little (or relatively less) cognitive load, creates greater space for using an analytical judgment method and also presents conditions that allow for the use of a disconfirmatory information seeking strategy as it is more demanding and requires more resources (see Figure 1).

In order to circumvent the natural tendency toward confirmatory bias, alternative hypotheses should be considered. However, exhaustive analysis of the primary hypothesis and its alternatives are likely only to be performed under optimal conditions (i.e., between sessions) when motivation and cognitive resources are readily accessible (Trope & Liberman, 1996). Under suboptimal conditions (i.e., during sessions), hypothesis generation and testing may not involve alternative hypotheses or may involve alternative hypotheses that are complementary to the primary hypothesis, which maintains the likelihood of falling victim to confirmation bias (e.g., Arkes, 1991; Trope & Liberman, 1996). Unfortunately, this process is likely to undermine therapist's ability to make optimal clinical judgments and could ultimately limit therapy effectiveness.

Perhaps the most critical point is that individuals are unlikely to be aware of confirmation biases (Wilson & Brekke, 1994). Therapists, due the feelings of rightness often associated with their intuitive judgments, usually fail to realize that they have misinterpreted the data to support or disconfirm their

hypotheses when drawing inferences, and will often not notice that their choice of questions may have influenced client responses. Hence, a critical area of future work may involve identifying ways to increase therapists' awareness of their biases, identify (dis) confirmatory strategies used to test hypotheses, and explore strategies that promote control and monitoring of clinical judgment and information seeking processes (see Thompson et al., 2011).

Summary of the Conceptual Model: Directions for Future Research and Clinical Implications

In summary, the model proposes that the in-session context moderates the use of judgment methods. Since therapy sessions are usually characterized by the presentation of complex information, time constraints, and emotional arousal, it favors an intuitive method because tasks conducted within sessions are not easily broken into smaller sequential parts for deliberate processing. Intuitive decision methods have the propensity for limited hypothesis generation (typically only one hypothesis) and confirmatory processing given the feeling of rightness that accompanies the intuitive judgment process. This pathway to clinical decision-making is vulnerable to numerous limitations (e.g., confirmatory biases), particularly for the novice therapist who is less likely to be accurate in making judgments due to lack of experience. Conversely, analytical decision methods may lead to numerous hypotheses in the causal reasoning process, which invite the therapist to seek new information to support validation. This pathway to clinical decision-making is likely less prone to bias and may ultimately optimize therapy effectiveness, especially in the cases where the initial hypothesis does not accurately reflect the client's specific problems and needs. However, analytical processes, by nature, may seem slower and more cumbersome and this process may not obviously fit with the various theoretical orientations that guide clinical care. In reality, it may be ideal to use these judgment methods in tandem in the therapy session.

For instance, Safran and Muran (e.g., 2000, 2006; Safran, Muran, Samstag, & Winston, 2005) present efforts to integrate intuitive and analytical judgments within the therapy session. In their model of exploring and ameliorating alliance ruptures, they propose that the identification of implicit relational patterns and internal experiences—which are intuitive judgments—will efficiently reveal an alliance rupture. Subsequently, they state the importance of bringing to awareness these intuitive judgments so as to trigger a deliberative (analytical) process that could then be used to repair the alliance (e.g., Safran & Muran, 2000, 2006; Safran et al., 2005). This line of research is one example in which intuition may be used as a cue to promote analytical judgment methods to enhance therapy effectiveness. A corollary of the interaction between intuitive and analytical methods at the client level

is the work developed by Beevers and colleagues. In order to better understand the cognitive mechanisms that sustain depression, Beevers (2005) explored the conditions under which cognition is ruled by more automatic/associative (intuitive) and/or deliberative (reflective, analytical) and advocates for the use of analytical reasoning to interrupt clients' automatic disruptive associations and schemas (Beevers, 2005). However, more research is needed to experimentally explore the cognitive processes underlying this approach and its ultimate impact on client outcomes.

Some preliminary clinical recommendations can emerge from this overview of the processes underlying the clinical judgments made in session. Because the clinical session context may leave therapists vulnerable to a cascade of processes falling outside of their awareness, we encourage therapists to focus on factors (e.g. the feelings of rightness associated to the judgment) underlying the judgment process that allow them to use different strategies that increase their control over the judgment process. We suggest that therapist actions focus on the process of validating their initial hypotheses, which will then influence subsequent hypothesis generation and testing (Box 4). The conceptual model suggests that it may be critical for the therapist to develop at least two sound initial hypotheses and subsequently test the validity of the judgments made (through memory retrieval, formal data collection, or informal inquiry) for optimal clinical practice. Thus, therapists should endeavor to be actively curious and openly search for and integrate new information in an effort to refute or support alternative hypotheses and avoid confirmatory biases. As such, therapist curiosity may be considered a form of competence that influences judgment appropriateness and therapy effectiveness.

In the proposed model, individual variables such as thinking style (Epstein et al., 1996) and need for cognition (Cacioppo & Petty, 1982) plus the context including tasks characteristics influence the therapist's judgment methods. However, there is a lack of empirical literature regarding how these two factors interact with each other to influence the judgment process (see a discussion in Stanovich, 2012). Some theoretical orientations and therapeutic techniques may favor the use of one judgment method over the other. For example, free association implies the use of intuition, whereas reviewing a client's episode using a chain analysis requires an analytical method. Knowing one's proclivity toward a particular thinking style may allow therapists to intentionally select and adapt techniques that fit within therapists' theoretical orientation without relying solely on one judgment method. Moreover, therapists could engage in a judgment process that leads to the identification of what information is being used to make the judgment. This may allow therapists to identify when a judgment is being made without an active engagement and outside of therapists' full awareness. Therapists should also endeavor to identify their "feelings of rightness" about the judgments made and ensure that they still engage in an active and disconfirmatory hypothesis testing approach, even though the hypothesis seems correct.

Ultimately, the aim of this conceptual model is to improve our understanding of the impact of judgment methods on overall therapy effectiveness. The preliminary clinical recommendations described above may be relevant across theoretical orientations. Until research suggests otherwise, this conceptual model likely applies to therapeutic approaches regardless of level of structure, degree of directiveness, past or present emphasis, individual or relationship focus, or whether they attend to processing problems or solutions. Simply put, we contend that this approach can be used every time a therapist is aware that he or she is generating a clinical hypothesis or judgment. However, the question remains: How can therapists bring intuitive judgments into awareness and mitigate the strong feeling of rightness that follow in order to engage in disconfirmatory information seeking? There is a clear gap in the empirical literature that must be filled in order to answer this question.

Three testable propositions emerge from this conceptual model. First, intuitive reasoning is likely the primary judgment method used in the clinical session. Second, use of intuitive reasoning increases the therapist's feelings of rightness and subsequently results in limited information seeking to disconfirm alternative hypotheses. Third, use of analytical reasoning in the clinical session is likely to optimize the case conceptualization and overall therapy effectiveness.

To test these propositions, a series of studies are necessary. For instance, a randomized study is needed to evaluate the unique contributions of clinician thinking styles (Epstein et al., 1996), clinical experience, and analytical and intuitive judgment processes (e.g., Radecki & Jaccard, 1995) on treatment effectiveness and client outcomes.

Future research should also explore therapists' selfreported metacognitive "feelings of rightness" (Thompson et al., 2011) in a clinical session context and evaluate methods for encouraging therapists to seek additional information and monitor their intentional access of this information. Studies of this nature are necessary to inform clinical training opportunities to maximize therapy effectiveness. On the other hand, studies focused on disentangling different intuitive processes (e.g., Braga, Ferreira, & Sherman, 2015) should also contribute to broaden our understanding of therapist's judgments made within the session.

Additionally, it is important to learn the underlying processes and conditions when therapist clinical judgments are most influenced by others, considering that therapists often make clinical judgments in collaboration with the client and other clinical team members (e.g., supervisor, prescriber). There is extensive literature demonstrating that collaboration with the client strongly impacts treatment outcome (e.g., Hill, 2005). For example, the collaborative/ therapeutic assessment paradigm (e.g., Finn, 2007; Finn, Fischer, & Handler, 2012; Finn & Tonsager, 1997; Fischer, 2000) leverages a collaborative process of questioning and information gathering between the client and therapist to inform clinical decisions. Other examples of research on collaborative judgment and decision-making processes focus on acquisition and transfer of tacit knowledge and the co-

construction, within the team, of implicit rules to make decisions and inform practice (Gabbay & le May, 2004, 2011). In both examples, the collaborative process allows therapists to adjust their practice to clients' specific needs at each moment, which is expected to promote a more effective practice. However, it remains unclear what processes guide the therapist's judgments within the session. For example, when does a client help the therapist clarify a narrative? What information is being transmitted between therapist and client and how is it interpreted? How do these judgment processes influence the hypotheses generation and testing in the session context?

Moreover, in recent years, perhaps to address the limitations of correlational quantitative research, many advances in psychotherapy research have come from qualitative and mixed methods study designs. These methods have allowed researchers to access and understand the complexity inherent to the psychotherapy process in order to capture the narratives underlying the quantitative data, and to explore the relational processes occurring in-session (e.g., Gonçalves et al., 2011; for reviews see Angus, Watson, Elliott, Schneider, & Timulak, 2015; Lutz & Hill, 2009). Along with a richer and more complex understanding of psychotherapy came a level of analysis focused on the last steps of the psychotherapy process, the client's and therapist's behaviors, as opposed to the cognitive processes that led to the observable behavioral outcomes. This has certainly contributed to a broader array of variables and emphasized the differences among psychotherapies; however, oftentimes this has diverted the attention from the core and common aspects of change in psychotherapy. For example, these designs have limited the investigation of basic therapists' variables as common core factors (see a further discussion on the equivalency between psychotherapies in Stiles, Shapiro, & Elliott, 1986). Thus, the proposed model is designed to promote experimental investigations independent of the psychotherapy theoretical orientation to inform our understanding of the basic cognitive processes that govern clinical decision-making.

Finally, it is important to emphasize the shift in the field of clinical psychological science toward implementation of EBPs into the settings for which they were intended. The role of clinical judgment has largely gone overlooked as it relates to the effective implementation of EBPs in applied mental health settings. The challenges associated with bridging the gap between research and practice are complex, and although recent efforts have sought to facilitate and improve the implementation process, EBP implementation efforts have not yet reached their full potential (Aarons, Hurlburt, & Horwitz, 2011). In an effort to focus therapy session decisions, recent literature demonstrated that using a continuous and standardized assessment (before and during treatment) in youth psychotherapy focuses the treatment session on the problems that clients and therapists consider most important (Weisz et al., 2011). These results support the argument that therapist decision-making, if guided by research and informed with client feedback, can optimize EBP delivery when compared to both a standardized manual (most rigid approach) and usual care (most flexible approach)

(Weisz et al., 2012). Indeed, the proposed conceptual model suggests that therapists' clinical judgments made within each session play a central role in the application and success of EBPs. That is, the proposed model suggests that to optimize the implementation of EBPs in "real-world" settings, the therapist's process of judgment validation requires careful attention. Moreover, by creating the conditions that allow therapists to have more control and awareness of their judgment processes during a session, they may improve their fidelity to the EBP and optimize its outcomes for a given client. Research focused on this issue could answer the questions of when does a therapist drift from the EBP as it was intended to be delivered and would an analytical approach help therapists to maintain fidelity? Since individual therapy is likely to remain a predominant mode of care delivery for those suffering from mental illness, implementation scientists will likely need to pay careful attention to the impact of therapist judgment methods and processes within the clinical session context.

Conclusion

This manuscript endeavored to integrate findings from basic and applied sciences in order to promote a better understanding of in-session clinical judgments within a dynamic and multi-level conceptual model. The purpose of this model is to promote further discussion and empirical research related to the judgment methods, influential factors (therapist variables, clinical session context, task characteristics), causal reasoning, and information seeking processes that impact clinical decision-making. To better understand the clinical judgment process and the effects of judgments on therapy effectiveness, it will be necessary to disentangle the influence of both contextual factors and clinical task characteristics (Dane et al., 2012). Careful consideration of circumstances and context, as well as an understanding of the role of therapist awareness and control in the judgment method, may illuminate innovative methods for optimizing therapist judgments (Evans, 2008; Wegner, 2003) and ultimately therapy effectiveness.

Attention should also be paid to the role of backward and forward inferences (Hogarth, 2010), causal reasoning (Lagnado, 2011) and hypothesis generation and testing (Thomas et al., 2008) as cognitive processes guiding the therapist's information seeking behavior. In sum, analytical and intuitive judgment methods may occur both between and within the therapy session. Knowing the specific conditions that promote the use of a particular judgment method may be vital to adapt the session in order to meet the client's needs and enhance therapy outcomes. The proposed model, once rigorously tested, may serve to inform what type of judgment and causal inference (causal explanation or prediction) are most effective under particular conditions, how many clinical hypotheses and how should these hypotheses be formulated in order to optimize the quality of mental health care.

Clinical research has yet to focus on the cognitive processes underlying clinical judgments, therefore experimental clinical studies are needed to address this research-practice gap. Ultimately, practice and training guidelines may emerge with associated techniques through which therapists will be able to exert deliberate and intentional control on the judgment method they wish to use, understanding its potential impact on the course of treatment. This deliberate control may then serve to enhance clinical outcomes across diagnoses and treatment modalities and lead to enhanced EBP fidelity and implementation success.

Chapter 3 – Decomposing the clinical session: Task decomposability and confirmatory hypothesis testing in psychotherapy

This empirical chapter corresponds to a manuscript submitted to a scientific journal.

Abstract

Psychotherapy approaches that require therapists to formulate clinical judgments as testable hypotheses require non-confirmatory thinking. Such judgments are challenging to develop during a clinical therapy session, where therapists receive a constant stream of information from the client, making it difficult to decompose and analyze information in smaller parts. We argue the clinical session promotes the use of intuition, leading to schema-driven processing (confirmatory hypothesis testing). We test whether local processing of fictitious session recordings, induced by pausing recordings for participants to make intermediate judgements, could reduce confirmatory hypothesis testing of a focal diagnosis. In 4 experimental studies, we found that local processing reduced the value placed on the focal diagnosis and this reduction resulted from the comparison of subsequent information to the focal diagnosis (studies 1 and 2). We further found that local processing reduced the confirmatory tendency towards a strong causal attribution, when a weaker diagnosis was also elicited (study 3). However, when the two focal diagnoses were hard to integrate, global processing leads to the same pattern of hypothesis testing as local processing, with no confirmation of a single hypothesis (study 4). Our results suggest that schema-driven processing associated to global thinking does not depend on the order of symptom presentation, and therefore is likely holistic non-sequential processing. Implications for clinical training and practice are discussed.

Keywords: Clinical judgment, Intuition, Confirmatory strategy, Global processing, Diagnosis

Introduction

Throughout a psychotherapy process, therapists are judging what the client is describing and deciding when and how to use a certain technique (Goldberg, et al., 2018; Weisz et al., 2011). This information evaluation process, that occurs within and between psychotherapy sessions is highly demanding, especially because clinical cases rarely match the exact steps and features defined in psychotherapy guidelines, manuals and training. To overcome the gap between the planned, standardized therapy process and a real and unique clinical case, research in clinical psychology has emphasized how clinical judgments should consist of hypotheses that must be tested in order to meet clients' needs (e.g., Persons, 2006; Persons, et al., 2013; Kuyken, et al., 2008). Specifically, in psychotherapy approaches that conceive of clinical judgments as testable hypotheses, such as the Cognitive Behavioral Therapy (e.g., Beck , 2011), therapists are expected to be aware of the clinical information they used to make their judgments (Persons, 2006) and to clearly identify the rationale underlying their case formulation and choices for treatment (Haynes & Williams, 2003). This implies continuous data collection to test and update clinical hypotheses, ideally implementing a sequential analytic process in the clinical session where the majority of the work occurs. Specific information is expected to be deliberately and iteratively used to test the initial judgment, leading to a treatment plan that fits the client's needs and case characteristics (Haynes, et al., 1999). This hypothesis testing process is, however, highly effortful and under conditions of high cognitive load, as exist in a psychotherapy session, is associated with several cognitive biases (see Garb, 2005). Information load, emotional arousal associated with empathic processes, and pressure to maintain fluent interaction with the client make the clinical session a context in which it is challenging to decompose information into smaller parts and analyze it sequentially (Hammond et al., 1987; Pretz, 2008). Thus, the context in which therapists do much of their work constrains the recommended step-by-step analytic judgment method and favors processing information as a global whole (e.g., Jacinto et al., 2018). In the present work we explore whether such global processing of information promotes confirmatory clinical diagnosis strategies when compared to the local processing of the recommended step-by-step analysis of information.

The psychotherapy session is arguably a complex and demanding context in which to form judgments and make decisions. It has been argued that such complex contexts, where information is not easily decomposed into smaller parts -- demanding time, cognitive effort and ability -- favor the use of intuitive judgment and decision processes (Dane, et al., 2012; Hammond et al, 1987; Hogarth, 2001; Pretz, 2008; Jacinto et al., 2018). Indeed, intuitive thinking is often parallel and associative and allows the holistic integration of disparate elements of tasks that are not easily decomposed, permitting one to make a global judgment (Dijksterhuis, 2004; Dijksterhuis, et al., 2006; Evans, 2008, 2010; Evans & Stanovich, 2013; Inbar et al., 2010; Kahneman & Frederick, 2002; Sloman, 1996;

Stanovich, 2004). Thus, intuitive consideration of complex information often implies a holistic and global processing of the information (e.g., Dijksterhuis, 2004). Nonetheless, while intuitive processes allow for the integration of many input cues under time pressure and low effort, the holistic and global processing of complex information may also lead to schema-driven processes and confirmatory hypothesis testing strategies, that may ultimately be responsible for misleading clinical judgments (see Garb 2005; Jacinto et al., 2018).

Previous research has consistently shown that hypothesis testing strategies are prone to confirmatory tendencies that will guide people into looking for, favoring, or interpreting information in ways that support their existing hypothesis (e.g., Nickerson, 1998). Individuals tend to generate hypothesis consistent with evidence from their memory (e.g., Kunda, 1990), ask questions that are likely to confirm their hypothesis (see e.g., Devine, et al., 1990; Hodgins & Zuckerman, 1993; Skov & Sherman, 1986; Snyder & Swann, 1978; Trope & Bassok, 1982, 1983; Trope & Thompson, 1997), weight information consistent with the hypothesis more heavily than inconsistent data (Zuckerman, et al., 1995), and integrate ambiguous or inconsistent data in the active schema (e.g., Asch, 1946; Darley & Gross, 1983; Strack & Mussweiler, 1997). For instance, confirmatory tendencies are often observed in the process of person perception, as an initial hypothesis about someone's personality will activate a schema, which favors confirmatory processing of subsequent information about the individual (e.g., Asch, 1946; Hamilton & Zanna, 1974). Similar processes occur when people interpret others' behavior, for instance, observers testing the hypothesis that an individual is hostile may interpret ambiguous behavioral information like pranks and practical jokes as displays of anger rather than as humorous acts (Srull & Wyer, 1980, 1989; Trope, 1986). Such confirmatory processes are also observed in psychotherapy contexts. When therapists are provided with a plausible diagnosis or are allowed to formulate their own diagnosis, they are likely to rely on confirmatory hypothesis testing strategies (Pfeiffer, et al.,2000), such as formulating questions that confirm their hypotheses about a client's problem (Haverkamp, 1993).

One way to circumvent the consequences of such confirmatory tendencies, is to consider alternative hypotheses (e.g., Thomas, et al., 2008). In fact, previous research on causal attribution has robustly demonstrated that the presence of one cause casts doubt on others, a phenomenon known as causal discounting (e.g., Kelley, 1972; Kelley & Michaela, 1980). Specifically, the presence of an alternative cause leads people to discount (reduce) the strength of an initial one (Goedert, et al., 2005; Kelley, 1972; Laux, et al., 2010). Thus, when forming a clinical diagnosis, considering a second diagnosis hypothesis should reduce the weigh given to first generated diagnosis, and therefore, reduce the confirmatory tendency towards the initial hypothesis. Exhaustive analysis of the primary hypothesis and its alternatives, however, is unlikely when cognitive resources are scarce (Gilbert, 1990; Gilbert &

Malone, 1995; Trope & Gaunt, 2000) and information processing is global or holistic (e.g., Eyal, et al., 2011), as is the case in a psychotherapy session (for a review see Jacinto et al., 2018).

In fact, confirmatory tendencies and schema-driven processes are potentiated by global processing of the information. A global processing of information has been shown to increase abstract thinking and broader categorization when compared to more local and concrete processing (Trope & Liberman, 2010). Thus, while global processing promotes inclusion of information in a category, local processing of information favors the exclusion of information from the main category (Bless & Schwarz, 2010; Förster, et al., 2008; McCrea, et al., 2012; Isen & Daubman, 1984; Förster & Higgins, 2005; Macrae & Lewis, 2002). Global processing has also been shown to lead to assimilation effects in social judgments, while local processing is more likely to lead to contrast effects. In one study, global processing (induced by a distal temporal perspective) was found to increase the accessibility of standard-consistent information words in lexical decisions and to lead to assimilation of self-ratings of athletic performance to that of the standard. On the other hand, local processing (proximal temporal perspective) increased the accessibility of standard inconsistent knowledge and led to contrast effects, that is, self-assessments in the opposite direction of the standard (Förster, et al., 2008). In causal attribution judgments, global processing was also found to increase the correspondence bias, that is, it increased the extent to which observed behaviors were attributed to personality and not to alternative contextual variables (Nussbaum, et al., 2003). Moreover, when forming impressions about others, more global processing seemed to increase schema-driven primacy effects when compared to more local processing (Eyal, et al,, 2011). This research seems to suggest that global processing favors broad categorization, as occurs in processes of personality impression, and reduces the focus on idiosyncrasies such as certain contextual circumstances.

In accordance with these findings, updating a causal belief when additional evidence is presented depends on whether judgments occur only after all information is disclosed, which should promote global processing of the information, or in a step-by-step fashion, with a separate and sequential analysis of information, which should promote local processing of the information (e.g., Anderson, 1981; Ashton & Ashton, 1988; Carlson & Dulany, 1988; Hogarth & Einhorn, 1992). Hogarth and Einhorn (1992) suggest that global judgments after all information is presented lead to primacy effects, in which subsequent evidence is aggregated into the initial hypothesis (a schema-driven confirmatory process), while processing information step-by-step leads to recency effects, with the last information presented being more influential on the final judgment – in other words, the rejection, or neglect, of the initial hypothesis.

In sum, task decomposability, or local processing, seems to disrupt schema-driven confirmatory tendencies. Nonetheless, it is not clear whether reduced confirmatory tendencies, also derived from step-by-step processing, facilitated the generation of alternative hypotheses. Moreover, this research

did not clarify the processes underlying belief updating when the hypothesis (causal attribution) was formulated by participants, nor did it clarify in which conditions of task decomposability ambiguous information lead to the confirmation or rejection of the hypothesis.

Decomposing parts of information should help reduce schema-driven processing, by facilitating local processing of information and the generation of alternative hypotheses that could reduce confirmatory tendencies (e.g., Hammond, 1987, Hogarth, 2001). In the present research we argue that the inherent complexity of the psychotherapy session makes it difficult to decompose the information communicated into discrete parts, creating a context that prompts the use of intuitive, global and schema-driven processes, that lead to confirmatory hypothesis testing. Thus, we test whether conditions that encourage local processing of information in clinical session contexts will reduce confirmatory tendencies in clinical judgments. More specifically, we aim to test under which conditions local processing reduces confirmatory tendencies and leads participants to generate alternative hypothesis when more than one diagnosis is supported by the information, which should increase causal discounting.

Main Paradigm

Our hypotheses is that the context of a clinical session would lead to confirmatory processing and that, when participants are required to decompose information, promoting local processing, we would see decreased confirmation tendencies. To test this, we developed an experimental paradigm in which participants listened to an audio recording from a fictitious psychotherapy session, with a client describing their feelings. Session recordings relied on the presentation of 1) symptoms that elicited a psychological disorder diagnosis (focal diagnosis), such as Depression; and 2) ambiguous behaviors and feelings that could be used to confirm or reject the hypothesis, either non-disorder feelings and behaviors or symptoms of other disorders. Ambiguous information could be integrated in the focal diagnosis, if considered congruent with that diagnosis, suggesting a confirmatory hypothesis testing strategy. On the other hand, ambiguous information could be used to reject the focal diagnosis, if perceived as incongruent, thus suggesting a less confirmatory hypothesis strategy. After listening to the audio recordings, participants rated the likelihood of three possible diagnoses, including the focal diagnosis hypothesis. Higher likelihood ratings would reflect a stronger presence of confirmatory hypothesis testing processes.

Through the manipulation of task decomposability, we examined whether and to what extent, decomposing a task reduced the weight of the focal diagnosis and led to consideration of the alternative diagnosis. We hypothesized that processing all the session recordings at once (i.e., global processing) would lead to confirmatory schema-driven processing of information and a stronger

commitment to the focal diagnosis; whereas processing the session recordings in smaller parts in a step-by-step judgment task (i.e., local processing) would increase the focus on ambiguous information and, thus, reduce commitment to the focal diagnosis, suggesting lower reliance on confirmatory strategies. In Studies 1 and 2 we tested our hypothesis when information elicited only one focal diagnosis. In studies 3 and 4, we tested the underlying causal attribution process by examining diagnosis likelihood ratings when session recordings elicited two alternative focal diagnoses. Specifically, study 3 explored these processes when symptoms of the alternative diagnosis shared symptoms with the initially elicited one. In study 4, we utilized a clinical case where symptoms of the initial and the alternative diagnosis did not share symptoms.

Study 1

In study 1, we tested whether different levels of ease of decomposability led to different hypothesis testing strategies and thus to different diagnosis-likelihood judgements. To do this, we manipulated the task presentation format of the session recordings (global vs. local conditions). The diagnosis eliciting information was designed to lead to a depression diagnosis hypothesis. In the global condition, participants listened to all the information without interruptions and made a global clinical impression judgement at the end of the session recordings. This was expected to lead to a confirmatory hypothesis testing process, based on the activated diagnosis. In the local condition, participants listened to the information with periodic pauses, at which point participants were asked to make a local clinical impression judgement, thereby processing pieces of information separately. This was expected to reduce the use of a confirmatory hypothesis testing strategy. Therefore, we expect likelihood ratings for depression to be higher in the global condition than in the local condition.

Participants

Seventy-seven participants (51 Female, M_{age} = 26 years, *SD* = 6.15 years), with no knowledge or experience in clinical psychology, completed this experiment in exchange for a 5€ supermarket gift certificate. Participants were Portuguese speaking and the experiment was conducted in their native language.

Materials

Session Audio Recordings

We developed two session audio recordings for the experiments. These recordings consisted of fictitious clients describing their emotional and behavioral experiences. We designed the recordings to elicit a specific psychological disorder diagnosis: Depression. Each recording contained information to elicit a Depression diagnosis and ambiguous information that could be used to confirm or reject the Depression diagnosis. For the diagnosis eliciting information, we presented behaviors and feelings that correspond to Depression symptoms (developed from symptoms described in the DSM-5 (APA, 2013) definition of Depression). For instance, in the session recordings the client stated "(...) I don't do things with excitement like I used to. I don't feel like studying, I can't focus. I am feeling so blue, sad really. (...)" or "(…) Then I just end up staying home in my pajamas, laying on the sofa, all day…I feel like I don't have the energy to go on my usual walks (…)." For the ambiguous information, recordings consisted of behaviors and feelings that could be interpreted as ambiguous or contradictory to the diagnosis of Depression, for example, "(…) I think I've been able to make a life plan and am setting what I have to do, step-by-step…" or "(…) I'm so eager to end my treatment and leave this wheelchair behind. (…) I just want to go on a big trip with my friends, spend some time in Asia. (…)" (see supplemental materials).

Each piece of information was rephrased to create two equivalent cases, corresponding to the two different fictitious clients, one per ease of decomposability condition. The descriptions were then audio recorded in a monotonic voice by a professional sound editor. To minimize noise in the audio recording (to standardize the voice tone), both client's descriptions were recorded by the same person and subsequently edited (changed in pitch) in order to simulate the voices of two different people.

Procedure

Participants were told that the goal of the experiment was to better understand how people make impressions and diagnoses in clinical psychology cases. Participants were told to imagine they were therapists doing a triage session and that they would be presented with the audio session recordings from two different individuals, describing their own feelings and thoughts, and about whom they would be making clinical judgments. Participants were instructed to listen to each recording carefully, since they would only be able to listen once. Participants were told that a triage session requires getting an impression of the case and that it is possible to encounter some people who are suffering

from psychological disorders and others who are not. Participants were told the clinical cases were fictitious.

For each of the two conditions, participants listened to one of the session recordings with instructions to make a clinical impression about that person. In the global condition, the session recording was presented without interruptions and participants were asked to make a global clinical impression after listening the entire recording ("Now, based on everything you know about Louise, do you think Louise suffers from psychopathology?", from 1 – Not likely at all – to 10 – Totally likely). This judgment was expected to consolidate the information processed, including the generation of the focal diagnosis of Depression. In the local condition (order counterbalanced), participants heard the session recording in a sequence of six smaller parts, each followed by a local clinical impression ("Based on these behaviors, do you think Louise suffers from psychopathology?", from 1 – Not likely at all – to 10 – Totally likely) (local condition). Finally, after listening to all the parts, participants were asked to make a global clinical impression, similar to the global condition ("Now, based on everything you know about Louise, do you think Louise suffers from psychopathology?", from 1 – Not likely at all – to 10 – Totally likely). The attribution of each fictitious client to decomposability conditions was randomized between participants.

In both decomposability conditions, after making the global clinical impression, participants were asked to make three diagnosis likelihood ratings. Participants rated how likely the person described had Depression, Generalized Anxiety, and Obsessive-Compulsive Disorder (OCD) (from 0 – Not Likely at all to 100 – Totally likely). Asking participants how likely the person had Depression tested how much they felt the focal hypothesis had been confirmed. Furthermore, asking participants to rate the diagnosis of Generalized Anxiety, tested whether participants considered a plausible alternative hypothesis. The diagnosis of Obsessive-Compulsive Disorder (OCD) was expected to have lower ratings in both conditions, serving as our control condition to assess participant's attention to the information in the session recordings. We expected to find higher ratings of Depression, the focal hypothesis, when information is processed globally than when information is processed locally. No differences were expected between processing conditions for the diagnosis of Generalized Anxiety and OCD.

Design

The two (Task decomposability: global vs. local) X three (Diagnosis: Depression, Generalized Anxiety, OCD) design was completed within participants.

Results

Diagnosis likelihood ratings (Depression, Generalized Anxiety and OCD) were entered into a repeated measures ANOVA with Decomposability (global vs. local) and Diagnosis as within participant independent variables, and the order of decomposability conditions as a between participants independent variable.

There was a main effect of Diagnosis, $F(1,76) = 76.93$, $p < .001$, $\eta_{partial}^2 = .506$, in which pairwise comparisons showed that the diagnosis of Depression was not higher than the diagnosis of Generalized Anxiety ($p = .354$) but was higher than the diagnosis of OCD ($p < .001$). See Table 1 for means.

We also found a main effect of decomposability, $F(1,76) = 7.562$, $p = .007$, $\eta_{partial}^2 = .092$, in which global processing lead to higher overall diagnosis ratings than local processing. No significant interaction was found between diagnosis and decomposability conditions ($F(2,75) = 1.433$, $p = .242$, $\eta_{partial}^2 = .019$ There was no main effect of the order of decomposability conditions ($F(1,76) = 0.86$, $p = .355$, $\eta_{partial}^2 = .011$), however we found an interaction effect between decomposability condition order and task decomposability, $F(2,75) = 26.618$, $p < .001$, $\eta_{partial}^2 = .262$, suggesting that the first decomposability condition to be presented led to higher likelihood ratings ($M_{global1st} = 44,25$, $SE_{global1st} = 2,42$, $M_{global2nd} = 39,04$, $SE_{global2nd} = 2.39$; $M_{local1st} = 42,74$, $SE_{local1st} = 2,24$, $M_{local2nd} = 32,11$, $SE_{local2nd} = 2.27$). No other effects of interest were found[i].

	Global Mean (SE)	Local Mean (SE)	Total Mean (SE)
Depression	59.75	51.21	55.48
	(3.35)	(3.02)	(3.19)
Generalized Anxiety	49.92	47.76	48.84
	(3.08)	(3.19)	(3.14)
OCD	15.27	13.30	14.29
	(2.48)	(2.30)	(2.39)
Total	41.65	37.42	39.54
	(2.97)	(2.84)	(2.91)

Table 1. Diagnosis ratings (Depression, Generalized Anxiety and OCD) in the two ease of decomposability conditions (global and local).

Despite the lack of interaction between diagnosis and task decomposability, based on our hypothesis, we performed planned comparisons (paired samples t-test) of diagnosis between

decomposability conditions, which showed that global processing lead to higher ratings of Depression diagnosis than local processing ($t(76) = 2.07$, $p = .042$, 95%, CI [0.31, 16.28), but did not lead to higher ratings of Generalized Anxiety ($t(76) < 1$; $p = .541$), nor OCD ($t(76) = 1.16$, $p = .248$.

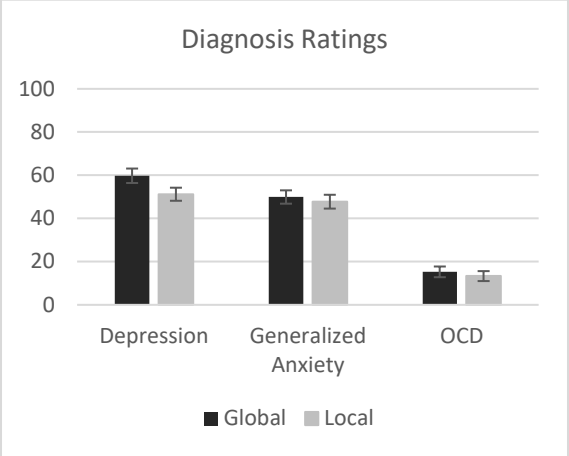

Figure 1. Diagnosis ratings (Depression, Generalized Anxiety and OCD) in the two ease of decomposability conditions (global and local) (* p < .05).

Discussion

Results indicate that task decomposability influenced (somewhat weakly) the strategy of hypothesis testing for the focal diagnosis of Depression, but not for the alternative hypothesis of Generalized Anxiety, suggesting schema-driven processing in the global condition. A task that promoted global processing of the information led participants to give more weight to the diagnosis of Depression than a task in which information was decomposed and processed separately step-by-step. This may have occurred because local processing of information led participants to give more weight to ambiguous information, rather than integrating it automatically into the initial focal diagnosis. The presented ambiguous information when processed individually and additively should cast doubt on the focal diagnosis hypothesis, reducing confidence on that hypothesis. Results of study 1 are in accordance with research showing that increasing the salience of additional information about a person reduces the weight given to the activated scheme (e.g., Anderson, 1981; Asch, 1946; Eyal, et al., 2011). It is noteworthy that study 1 also demonstrated that although the diagnosis of Generalized Anxiety was not purposely elicited, when participants were asked to test that hypothesis they seem to have retrieved information that led them to consider the diagnosis of Generalized Anxiety as a more plausible diagnosis than OCD. Research about the anchoring effect has demonstrated that a hypothesis

is generated, and tested, when a judgement is asked rather than beforehand (Payne, et al., 1992; Sudman, et al., 1996), which may explain why participants considered the diagnosis of Generalized Anxiety even though it was not elicited, because the symptoms presented could be compatible with that disorder but not with OCD. Study 1, however, does not clarify if increasing the salience of ambiguous information in the local condition led to a comparative process between the activated scheme (the focal diagnosis) and the additional information that, consequently, resulted in rejection of the focal diagnosis of Depression. In study 1, information was presented in a random order, which did not allow the testing of how participants used subsequent information in the local processing condition in order to test the focal diagnosis.

Study 2

Our goal for study 2 was to test whether local processing favors the comparative process between the activated scheme and additional information, in which the ambiguous information is used to reduce confidence in the focal diagnosis (the activated scheme) as suggested by previous research about belief updating or adjustment (e.g., Hogarth & Einhorn, 1992; Gilbert & Malone, 1995; Mussweiler & Strack, 2000). The process of belief updating would be sensitive to the order of presentation of information. Sequential and local processing of information weights each piece of information more heavily and recency effects are more likely to occur (e.g., Anderson, 1981; Hogarth & Einhorn, 1992). Therefore, if information eliciting a depression diagnosis is presented before ambiguous information, we should expect lower likelihood ratings for that hypothesis as recency effects should decrease the weight of the initial diagnosis eliciting information. However, if information eliciting a depression diagnosis is presented after ambiguous information, likelihood ratings for depression should be higher as recency effects will overweigh diagnosis eliciting information over ambiguous information.

In sum, if local processing favors a comparative process with the previously activated scheme, then we should observe lower confirmatory tendencies when a scheme is activated in the beginning of the stream of information, but not when the scheme is activated in the end of the stream of information.

Global processing of information should, on the other hand, be insensitive to the order effects, as diagnosis eliciting information will provide the schema to process ambiguous information regardless of its presentation order. Thus, confirmatory tendencies, and high ratings of depression, are expected when depression diagnosis eliciting information is presented either at the beginning or at the end of the information stream.

To test this hypothesis, we used the paradigm from study 1, but manipulated the order of presentation of the symptoms. When diagnosis eliciting information was presented first (primacy

condition), the local processing condition was expected to generate lower likelihood ratings of the focal hypothesis than the global processing condition. When diagnosis eliciting information was presented last (recency condition), no difference in the likelihood of the focal diagnosis hypothesis was expected between the local and global processing conditions.

Participants

One hundred five participants (74 Female, 70,5%), M_{age} = 24.7 years, SD_{age} = 6.12 years), with no knowledge and experience in clinical psychology, completed this experiment in exchange for a 5€ supermarket gift certificate. Participants were Portuguese speaking and the experiment was conducted in their native language.

Procedure

The methods and materials for study 2 were the same as described in study 1. In study 2, we manipulated ease of decomposability and Diagnosis, as in study 1, and added a manipulation of the order of depression symptoms in the session recordings. In the diagnosis primacy condition, the diagnosis of Depression was elicited in the beginning of the session, as the session recordings started with the description of depression symptoms, followed by ambiguous information. In the recency condition, the diagnosis of Depression was elicited at the end, as the session recordings started with the description of ambiguous feelings and behaviors and ended with the description of Depression symptoms. Symptom order was manipulated between participants. Half of the participants listened to the two session recordings that started with the symptoms of Depression (diagnosis primacy), while the other half listened to the session recordings in which the depression symptoms were presented in the end (diagnosis recency).

Design

The experiment was a two (task decomposability: global vs. local) X three (Diagnosis: Depression, Generalized Anxiety, OCD) X two (Symptom Order: Diagnosis Primacy vs. Diagnosis Recency) mixed design, within participants on the first two variable and between participants on Symptom Order.

Results

Diagnosis likelihood ratings were entered into a repeated measures ANOVA with ease of responsibility (global vs. local) and Diagnosis (Depression, Generalized Anxiety and OCD) as within participant independent variables and the Depression symptom order (primacy vs. recency) as a between participants independent variable.

We found a main effect of Diagnosis, $F(2,206) = 4.69$, $p = .001$, $\eta_{partial}^2 = .55$. Pairwise comparisons showed that diagnosis of Depression was higher than the diagnosis of Generalized Anxiety ($p < .001$) and the diagnosis of OCD ($p < .001$). See Table 2 for means. We also found a main effect of Depression symptoms order, $F(1,103) = 11.75$, $p = .001$, $\eta_{partial}^2 = .10$, in which the recency condition lead to higher diagnosis ratings.

There were two significant 2-way interaction effects. One between diagnosis and Depression symptom order, ($F(1,103) = 11.32$, $p = .001$, $\eta_{partial}^2 = .10$), in which pairwise comparisons between diagnosis and Depression symptom order demonstrated that the recency condition led to higher ratings of Depression than the primacy condition ($p < .001$), but other diagnosis, Generalized Anxiety and OCD did not differ between primacy and recency conditions ($p = .467$ and $p = .208$, respectively). See Table 2 for means.

We also found an interaction effect between diagnosis and task decomposability, $F(2,206) = 6.45$, $p = .033$, $\eta_{partial}^2 = .04$, in which pairwise comparisons showed that Depression ratings were higher in the global condition than in the local condition ($p = .011$), but no other diagnosis showed differences between decomposability conditions. See Table 2 for means.

	Diagnosis Primacy		Diagnosis Recency		Primacy	Recency	Global	Local
	Global	Local	Global	Local	Total	Total	Total	Total
	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)
Depression	52.88	42.35	72.31	67.81	47.62	70.06	62.60	55.08
	(3.94)	(4.18)	(3.83)	(4.06)	(4.06)	(3.95)	(3.88)	(4.12)
Generalized Anxiety	39.37	41.06	44.20	43.83	40.22	44.02	41.79	42.45
	(4.22)	(4.21)	(4.10)	(4.10)	(4.22)	(4.10)	(4.16)	(4.15)
OCD	10.16	11.24	15.78	13.91	10.70	14.84	12.97	12.57
	(2.80)	(2.63)	(2.72)	(2.55)	(2.71)	(2.64)	(2.76)	(2. 59)
Total	34.14	31.55	44.10	41.85	32.84	42.98	39.12	36.70
	(3.65)	(3.67)	(3.55)	(3.57)	(3.66)	(3.56)	(3.60)	(3.62)

Table 2. Diagnosis ratings (Depression, Generalized Anxiety and OCD) in the two of Decomposability conditions (Global and Local) per Symptoms Order conditions (Diagnosis Primacy and Diagnosis Recency).

Although we did not find a third order interaction, based on our hypothesis, we performed planned comparisons (paired samples t-test) between decomposability and diagnosis in each symptom order condition. Planned comparisons showed that in the recency condition, when the hypothesis was focal in the end, local processing of information did not lead to lower Depression ratings than the global condition ($t(53) = 1.31$, $p = .198$), nor did it lead to lower ratings of diagnosis of Generalized Anxiety ($t(50) < 1$, $p = .922$) or OCD (($t(50) < 1$). However, in the primacy condition, local processing of information led to lower ratings of Depression than global processing (, $t(50) = 2.22$, $p = .031$, 95%, CI [20.04, 1.02] / $p = .013$), but it did not lead to lower ratings of Generalized anxiety , $t(53) < 1$ or OCD, $t(53) < 1$.

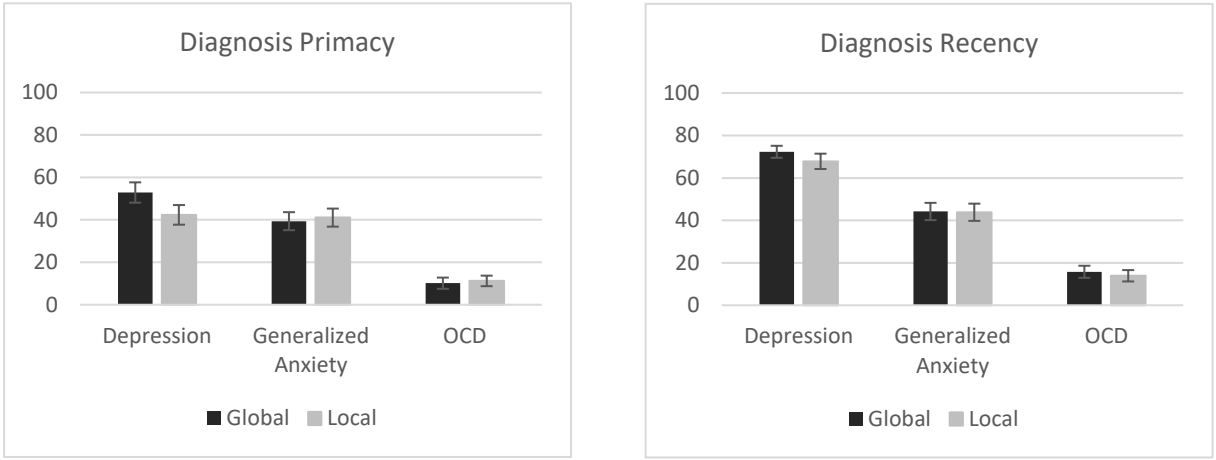

Figure 2. Diagnosis ratings (Depression, Generalized Anxiety and OCD) in the two of Decomposability conditions (Global and Local) per Symptoms Order conditions (Diagnosis Primacy and Diagnosis Recency).

Discussion

In study 2, replicating the pattern of results of study 1, we demonstrated a higher tendency for confirmatory processing in the global condition than in the local condition. In study 2 we further demonstrated that local processing facilitates the rejection of the focal diagnosis through the direct comparison of the focal diagnosis with the subsequent ambiguous information. Local processing seems to have no benefit on the reduction of confirmatory tendencies in the diagnosis testing strategy when

the diagnosis is elicited in the end of the session recordings. This suggests that local processing of information led to the use of subsequent information to correct the initially generated hypothesis, which cannot occur if the diagnosis is elicited in the end of the session recordings. Thus, eliciting the hypothesis of a depression diagnosis early in the session (primacy condition) seems to provide an opportunity for causal discounting of the hypothesis of Depression, when compared to a later generation of the diagnosis hypothesis (recency condition). Moreover, higher ratings of Depression in the recency condition compared to the primacy condition suggest that initial ambiguous information is neglected when diagnosis is elicited in the end of the session recordings. We conclude that local processing did not simply increase the weight of ambiguous information but promoted a comparative process that depended on the previous activation of the hypothesis.

In studies 1 and 2, we found evidence that global processing facilitates a schema driven process that integrates ambiguous information as confirming the activated schema when compared to local processing of the information. Yet, study 2 also suggests the presence of an order effect for the global processing condition, indicating a higher likelihood rating for the focal hypothesis in the recency condition (later presentation of the diagnosis eliciting information). This recency effect may indicate that even in global processing conditions, previous information is neglected when strong evidence for a focal hypothesis is presented at the end, positing a limit to the integrative processes expected in global processing conditions.

If global processing occurs sequentially, this finding further suggests that in the primacy condition, ambiguous information is difficult to integrate, and sheds doubt on the generated hypothesis even for global processing conditions. Therefore, eliciting the hypothesis after the presentation of the ambiguous information, would reduce the weight of such information on the diagnosis judgments.

Alternatively, the observed recency effect may indicate that global processing implies a holistic process, where integration of information occurs after all the information is presented, rather than a sequential integrative process as information unfolds. The later presentation of the diagnosis eliciting information would increase the salience and strength of the diagnosis hypothesis, perhaps facilitating integration of the ambiguous information when compared to an earlier elicitation of the diagnosis.

In study 3 we aim to more directly explore whether global processing is holistic or sequential.

Study 3

In study 3, we were interested in understanding the mechanisms underlying the tendency to confirm the focal diagnosis when information is processed in a global task. Specifically, we explored whether global processing occurred through a holistic process, integrating information into the active schema at the end of the information stream; or whether it occurred sequentially, whereby information was

integrated in the active schema as it unfolded. Additionally, we explored how information eliciting an alternative, but causally weaker, diagnosis would interact with the local/global processing in the formation of a diagnosis.

To do this, in study 3, we added subsequent information that consisted of symptoms that could either be integrated in the initial diagnosis or elicit an alternative one, which should reduce confirmatory tendencies.

Research on causal attribution has robustly demonstrated that the presence of a second possible cause reduces the strength of the initial one (Goedert, et al., 2005; Kelley, 1972a; Laux, et al., 2010). Since, making a diagnosis consists of a causal attribution inference, making an alternative hypothesis (new causal attribution) is expected to reduce the weight given to the initial diagnosis. As described by DSM-5 (APA, 2013), certain psychological disorders share symptoms, which means that the presence of those symptoms in a clinical case may be indicative of more than one possible diagnosis (symptoms with low diagnosticity). For example, intense fatigue is a symptom that can occur in both Depression and Generalized Anxiety (e.g., APA, 2013).

Indeed, in the present research most of the symptoms of Generalized Anxiety can also be indicative of Depression (low diagnosticity symptoms), however there are a large number of additional symptoms of Depression that are not indicative of Generalized Anxiety (high diagnosticity symptoms). Presenting symptoms of Depression and Generalized Anxiety should allow the generation of two diagnoses with different causal strength, where Depression is a strong causal attribution and Generalized Anxiety a weak causal attribution. Moreover, previous research has suggested that people are more likely to endorse hypothesis of higher a priori probabilities (Dougherty, et al., 1997; Dougherty and Hunter, 2003; Gettys, et al., 1987; Weber, et al., 1993), which in the current research supports the hypothesis that participants presented with symptoms that apply to both Depression and Generalized Anxiety should diagnose Depression more strongly than Generalized Anxiety.

Local processing conditions should facilitate the consideration of both hypotheses, as diagnosis eliciting information is processed individually and not integrated in an active schema. This would lead to less differentiation between Depression and Generalized Anxiety than in global processing conditions, regardless of symptom presentation order. Global processing conditions, on the other hand, should lead to confirmatory schema driven processes that make difficult the consideration of two diagnosis hypothesis.

Importantly, presenting symptoms with the potential to elicit two different diagnosis allows for testing whether global processing occurs sequentially or holistically. If global processing induces holistic (non-sequential) integration, we should observe higher ratings of Depression, the strong focal diagnosis (causal attribution), regardless of symptoms order because the stronger diagnosis would integrate both the ambiguous and the alternative-diagnosis symptoms in the active schema, regardless

of the order of presentation. In this case, we would expect higher ratings of Depression for Depression Primacy and Depression recency conditions.

If global processing induces sequential integration of the information towards the initial hypothesis, we should observe a primacy effect (higher likelihood ratings for the first focal hypothesis) particularly when the diagnosis of Depression is elicited before Generalized Anxiety. That is, when Generalized Anxiety is the first hypothesis, ambiguous symptoms should be assimilated to the active schema, but integration of high diagnosticity symptoms of Depression in the schema of Generalized Anxiety is less likely, hence both Depression and Generalized Anxiety may be considered likely diagnosis.

If global processing is holistic, it should lead to higher likelihood ratings of the stronger hypothesis (Depression) than local processing conditions, while likelihood ratings for the non-dominant hypothesis (Generalized Anxiety) should be higher for the local condition than for the global condition, regardless of symptoms presentation order.

If global processing is sequential, it should lead to higher likelihood ratings of the stronger hypothesis (Depression) than local processing conditions only when the stronger hypothesis is presented first. Likelihood ratings for the non-dominant hypothesis (Generalized Anxiety) should be higher for the global condition than for the local condition when this hypothesis is elicited first, but should be higher for the local condition than for the global condition when this hypothesis is elicited at the end.

Yet, because local processing may lead to recency effects (present study 2, Hogarth & Einhorn, 1992) the hypothesized effects may depend on which diagnosis is elicited last. Specifically, when Depression is presented at the end (vs. beginning) differences in Depression ratings between local and global conditions may be smaller. When symptoms of generalized anxiety are presented at the end (vs. beginning) the hypothesized differences in ratings of Generalized Anxiety between local and global conditions may be larger.

Thus, if global processing is sequential, local processing conditions should lead to lower likelihood ratings of the first elicited hypothesis, but higher likelihood ratings of the second hypothesis elicited, than global processing conditions.

Participants

One-hundred and twenty participants (43 Female, 35.83%), M_{age} = 39 years, *SD* = 10.24 years), with no knowledge and experience in clinical psychology, completed this experiment in exchange for monetary compensation, using Amazon Mechanical Turk (MTurk). Participants were English speaking, from the USA, and the experiment was conducted in their native language.

Procedure

Study 3 used a similar procedure to study 2, with the main exception being the addition of symptoms of Generalized Anxiety to session recordings. Specifically, participants were presented with the session audio recordings including three types of information: symptoms of Depression, ambiguous information, and symptoms of Generalized Anxiety. As in study 2, the order of presentation of the information was manipulated, resulting in two order conditions. In one condition, the session record started with depression symptoms, followed by ambiguous information, and ending with symptoms of Generalized Anxiety. In the other condition, the information described followed the reverse order, starting with symptoms of Generalized Anxiety and ending with symptoms of Depression.

Results

Diagnosis likelihood ratings were entered into a repeated measures ANOVA with ease of decomposability (global vs. local) and Diagnosis (Depression, Generalized Anxiety and OCD) as within participant independent variables and the Depression symptom order (primacy vs. recency) between participants independent. We found a main effect of Diagnosis, $F(2,118) = 345.11$, $p < .001$, $\eta_{partial}^2 = .75$, with pairwise comparisons indicating that the Depression diagnosis was rated significantly higher than the diagnosis of Generalized Anxiety ($p < .001$) and OCD ($p < .001$), and that Generalized Anxiety was rated higher than OCD ($p < .001$). There was no main effect of decomposability, $F(1,118) = .04$, $p = .852$, $\eta_{partial}^2 = .00$, and no main effect of symptom order, $F(1,118) = .035$, $p = .852$, $\eta_{partial}^2 = .00$. We also found a significant interaction effect between diagnosis and decomposability, $F(2,236) = 7.07$, $p = .001$, $\eta_{partial}^2 = .057$. There was no interaction effect between diagnosis and order of depression symptoms, $F(2,236) = .04$, $p = .957$, $\eta_{partial}^2 = .00$, and between decomposability and order of depression symptoms , $F(2,236) = .04$, $p = .484$, $\eta_{partial}^2 = .00$; and there was no second order interaction effect, $F(2,236) = .52$, $p = .595$, $\eta_{partial}^2 = .00$.

The significant interaction between diagnosis and decomposability suggested that the likelihood of Depression diagnosis was higher for the Global condition than for the Local condition ($p = .002$, 95%, CI [3.26, 13.68]) but that the likelihood rating of Generalized Anxiety was marginally higher in the Local condition than in the Global condition ($p = .070$, 95%, CI [-10.12, 0.41]), while no differences were found between the Local and Global conditions for OCD ($p = .831$, 95%, CI [-4.20, 3.38]), as indicated by pairwise comparisons. This finding indicates that local processing reduced confirmation of the strong hypothesis of Depression and facilitated consideration of the weaker diagnosis hypothesis of Generalized Anxiety. Considering that symptom order did not interact with decomposability and/or

diagnosis, the results seem to support the hypothesis of a holistic process rather than a sequential process in the global condition. Although we did not find the predicted significant interaction between diagnosis, decomposability and symptom order, to further test our hypothesis we performed a series of planned comparisons (paired samples t-test).

In the global processing condition, Depression was rated a more likely diagnosis than Generalized Anxiety in the Depression Primacy condition ($t(54) = 3.794$, $p < .001$, 95%, CI [8.14, 26.40]). Importantly, in the Depression Recency condition, Depression was also rated a more likely diagnosis than Generalized Anxiety ($t(64) = 4.07$, $p < .001$, 95%, CI [7.56, 22.10]), as expected by the holistic processing hypothesis but not by the sequential processing hypothesis. Additionally, in the global condition, the symptom's order manipulation did not lead to differences in likelihood of either the Depression diagnosis ($t(118) = 0.385$, $p = .701$, 95%, CI [-6.02, 8.92]) or the Generalized Anxiety diagnosis ($t(118) = 0.650$, $p = .849$, 95%, CI [-11.25, 9.27]), contrary to what would be expected by sequential processing. These findings support the idea that global processing uses a holistic process.

We also performed planned comparisons between the decomposability conditions for each condition of symptom order. For the primacy condition (Depression Generalized Anxiety) we found that the local condition led to lower ratings of Depression, $t(54) = 2.345$, $p = .023$, 95%, CI [1.41, 19.08], and marginally higher ratings of Generalized Anxiety, $t(54) = 2.003$, $p = .050$, 95%, CI [-14.30, 0.01], than the global condition. Planned comparisons for the Depression recency condition (Generalized Anxiety Depression) showed that local condition led to lower ratings of Depression, $t(64) = 2.163$, $p = .034$, 95%, CI [0.552, 13.848], and did not lead to significant differences in the ratings of Generalized Anxiety, $t(64) = 0.668$, $p = .507$, 95%, CI [-10.254, 5.115] when compared to the global condition. Again, the results are more congruent with a holistic processing account than with a sequential processing account of the global condition. See table 3 for means.

	Depression Primacy		Depression Recency		Primacy	Recency	Global	Local
	Global Mean (SE)	Local Mean (SE)	Global Mean (SE)	Local Mean (SE)	Total Mean (SE)	Total Mean (SE)	Total Mean (SE)	Total Mean (SE)
Depression	79,44	69,69	77,98	70,78	74,56	74,38	78,71	70,24
	(2,78)	(3,41)	(2,55)	(3,14)	(3,09)	(2,84)	(2,66)	(3,27)
Generalized Anxiety	62,16	69,31	63,15	65,72	65,74	64,44	62,66	67,52
	(3,81)	(3,60)	(3,51)	(3,31)	(3,71)	(3,41)	(3,66)	(3,46)
OCD	17,33	17,44	16,98	17,69	17,38	17,34	17,16	17,56
	(3,24)	(3,04)	(2,98)	(2,79)	(3,14)	(2,88)	(3,11)	(2,91)
Total	52,98	52,15	52,71	51,40	52,56	52,05	52,84	51,77
	(3,27)	(3,35)	(3,01)	(3,08)	(3,31)	(3,05)	(3,14)	(3,21)

Table 3. Diagnosis ratings (Depression, Generalized Anxiety and OCD) in the two Decomposability conditions (Global and Local) per Symptoms Order conditions (Depression Primacy and Depression Recency).

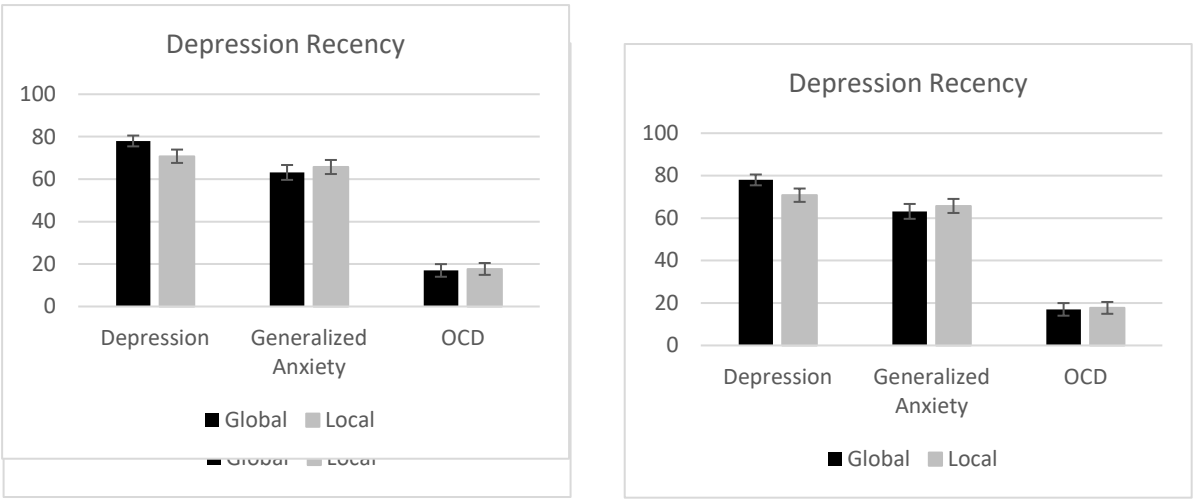

Figure 3. Diagnosis ratings (Depression, Generalized Anxiety and OCD) in the two Decomposability conditions (Global and Local) per Symptoms Order conditions (Depression Primacy and Depression Recency) (* $p \leq .05$).

Discussion

In study 3 we found evidence suggesting that global processing implies a holistic, rather than sequential, schema driven process. Presenting symptoms representative of two different diagnosis hypotheses led to higher likelihood ratings for the stronger diagnosis hypothesis. This is congruent with a holistic schema-driven process where information is integrated in the most salient or stronger hypothesis after all information is presented. Diagnosis likelihood ratings were also found to be independent on the order with which diagnosis eliciting symptoms were presented. Contrary to this finding, a sequential schema-driven processing should lead to higher likelihood ratings for the diagnosis elicited by the first symptoms. It thus seems that global processing leads to a holistic schema driven process, where information is used to confirm the most salient or stronger hypothesis.

Importantly, in study 3 we replicate the tendency for less confirmatory processing of the focal hypothesis of Depression when information is decomposed and processed more locally. Results showed that local processing led to lower likelihood ratings for Depression, the strong diagnosis hypothesis, than global processing. Moreover, local processing led to higher likelihood ratings of Generalized Anxiety, the weak diagnosis hypothesis, than global processing conditions, [particularly when the session recordings ended with symptoms of Generalized Anxiety.] Together, these findings

suggest that local processing led to a non-confirmatory processing of the subsequent information, enabling the consideration of two diagnosis hypothesis. It is noteworthy, however, that local processing led to similar likelihood ratings for the Depression and Generalized Anxiety hypothesis regardless of symptom order. This result seems to contrast with the higher likelihoods for the most recent hypothesis suggested by study 2. However, study 3 included additional information designed to elicit an alternative diagnosis. It is possible that attending to two hypothesis reduced recency effects, as both hypotheses were salient, allowing them to be compared and to be found to receive the same level of supporting evidence.

In the global processing condition we observed a general tendency to confirm the Depression diagnosis hypothesis even in the presence of an alternative diagnosis hypothesis, which we have argued should result from the low diagnosticity of the symptoms of Generalized Anxiety. Indeed, research on causal attribution has shown that weak causal attributions are overlooked in favor of strong causal attributions (e.g., Waldmann & Hagmayer, 2005) and that order effects are unlikely to occur for weak causal attributions (e.g., Hogarth & Einhorn, 1992).

Thus, the present results suggest that considering the diagnosis of generalized anxiety as an alternative cause seems to depend on the capacity to analyze information locally and independently.

Results of study 3 are thus especially important, considering that global processing may lead to future clinical judgements that do not attend to relevant symptoms of another disorder if that alternative disorder is characterized by less representative symptoms. In study 3 we hypothesized that low diagnosticity symptoms of Generalized Anxiety could be integrated in the hypothesis of Depression. Yet, this study did not clarify how additional symptoms of high diagnosticity, symptoms highly representative of an alternative psychological disorder, are processed, when they cannot be attributed to the initially elicited diagnosis of Depression. Study 4 thus tests whether high diagnosticity symptoms of an alternative psychological disorder increase consideration of alternative diagnosis hypotheses, and thus limiting confirmatory tendencies.

Study 4

Results from studies 1 to 3 found that local processing led to lower ratings of the initially elicited diagnosis, presumably due to less confirmatory hypothesis testing, than global processing. Moreover, in study 3 we rejected the hypothesis that global processing leads to a sequential schema-driven integration of information, suggesting that the confirmatory tendencies result from holistic processing. Specifically, in study 3, when information was processed globally, we found that of two possible diagnoses that shared symptoms, but differed on the strength of the possible causal attribution, the

strong causal attribution diagnosis was more diagnosed than the weak one. This suggests that low diagnostic symptoms of generalized anxiety (the weak cause) were interpreted as symptoms of depression (the strong cause).

When more than one cause can explain the same effect or, in the present context, when the same symptoms can be explained by different diagnosis, the stronger cause may reduce the strength of the alternative. However, such causal discounting is not expected if the different causes lead to different and independent effects (e.g., Kelley, 1972), that is, if different symptoms (effects) can only be explained by different diagnoses (causes). If highly diagnostic symptoms can only be attributed to one diagnosis, they are unlikely to be integrated in a different diagnosis scheme. The presence of symptoms highly diagnostic of different psychological disorders may thus represent a limit to the schema driven confirmatory processes observed in studies 1 to 3 and increase the consideration of alternative diagnosis.

While study 3 presented symptoms that are diagnostic of both Depression and Generalized Anxiety, in study 4 we tested whether symptoms highly diagnostic of an alternative diagnosis impose a limit to the observed confirmatory tendencies in global processing conditions.

In study 4 we present the same highly diagnostic symptoms of Depression, but add symptoms from an alternative diagnosis that does not share symptoms with Depression, specifically Obsessive Compulsive Disorder (OCD). When symptoms are highly representative of a disorder, they are difficult to categorize in a different diagnosis. It should thus be difficult to categorize symptoms of depression as symptoms of OCD, and vice-versa. If global processing leads to holistic non-sequential schema-driven processing, then we would expect no integration of subsequent information in the initial elicited diagnosis when the alternative diagnosis does not share symptoms with the initial diagnosis. This should impose a limit to confirmatory tendencies in the global processing, regardless of symptom presentation order. We thus expected similar likelihood ratings for Depression and for OCD, as both hypothesis should be considered in the global and in the local processing conditions. Moreover, we expected that global processing would not lead to higher confidence in the diagnosis hypothesis than local processing conditions, reducing the confirmatory tendencies observed in studies 1 to 3.

Participants

Sixty-five participants (52 Female, 80%), M_{age} = 23.85 years, *SD* = 3.52 years), students of a master in clinical psychology, with knowledge of clinical psychology (although limited to no therapy practice history), completed this experiment in exchange for course credit. Participants were Portuguese speaking, from Portugal, and the experiment was conducted in their native language.

Procedure

Study 4 used a similar procedure to study 3, in which the session audio recordings included symptoms of two diagnoses in order to elicit the generation of two hypothesis. In study 4, participants heard symptoms of Depression and symptoms of Obsessive-Compulsive Disorder. Moreover, to facilitate the generation of two competing hypothesis, we reduced the quantity of neutral information between the presentation of symptoms of the two diagnosis. The order of presentation of depression and OCD symptoms was counterbalanced, resulting in two orders (from Depression to OCD and vice-versa).

Results

We conducted the same analyzes conducted in study 3. In study 4 the two elicited hypotheses are the diagnoses of Depression and OCD. The only significant effect was a main effect of Diagnosis ($F(1,63) = 29.95$, $p < .001$, $\eta_{partial}^2 = .32$). See table 4 for means. Pairwise comparisons showed that ratings of Depression were higher than ratings of Generalized Anxiety ($p < .001$) but were not higher then ratings of OCD ($p = 1.00$), and ratings of Generalized Anxiety were lower than ratings of OCD ($p < .001$). We found no main effect of ease decomposability, $F(2,126) = 1.22$, $p = .273$, $\eta_{partial}^2 = .02$, and no main effect of symptoms order, $F(1,63) = 0.29$, $p < .592$, $\eta_{partial}^2 = .01$. There was no interaction effect between diagnosis and ease of decomposability ($F(2,126) = 0.27$, $p < .266$, $\eta_{partial}^2 = .00$; no interaction effect between diagnosis and symptoms order, $F(2,126) = 0.29$, $p < .281$, $\eta_{partial}^2 = .00$. We also found no second order interaction effect, $F(2,126) = 1.28$, $p < .592$, $\eta_{partial}^2 = .02$. See table 4 for means.

The two symptom order conditions were aggregated since there was no main effect of order. Planned comparisons between decomposability conditions were non-significant for the diagnosis of Depression ($p = .929$), the diagnosis of Generalized Anxiety ($p = .693$), and for the diagnosis of OCD ($p = .306$). Moreover, although interaction effect was not significant, to follow the procedure of the analysis of study 3, we also performed planned comparisons between the decomposability conditions for each condition of symptom order. For the Depression primacy condition, we found no differences between local and global conditions for the Depression ratings, $t(28) = 1.036$, $p = .309$, 95%, CI [-13.755, 4.513], and the OCD ratings, $t(28) = 1.162$, $p = .802$, 95%, CI [-4.237, 15.340], and for the control condition, the Generalized Anxiety ratings, $t(28) = 0.609$, $p = .548$, 95%, CI [-4.569, 8.431]. In the planned comparisons for the Depression recency condition (OCD Depression) we also found no differences between the local and global conditions for the ratings of Depression, $t(35) = 1.086$, $p = .285$, 95%, CI [-4.539, 14.983] , and for the ratings of OCD, $t(35) = 0.252$, $p = .802$, 95%, CI [-7.637,

9.803]. We also found no differences in the ratings of Generalized Anxiety, $t(35) = 0.042$, $p = .967$, 95%, CI [-7.934, 8.267]. See table 4 for means.

	Depression Primacy		Depression Recency		Primacy	Recency	Global	Local
	Global Mean (SE)	Local Mean (SE)	Global Mean (SE)	Local Mean (SE)	Total Mean (SE)	Total Mean (SE)	Total Mean (SE)	Total Mean (SE)
Depression	61,34 (4,53)	65,97 (4,42)	70,89 (4,06)	65,67 (3,96)	63,66 (4,47)	68,28 (4,01)	66,12 (4,30)	65,82 (4,19)
Generalized Anxiety	43,31 (4,82)	41,38 (5,35)	41,50 (4,32)	41,33 (4,80)	42,34 (5,08)	41,42 (4,56)	42,41 (4,57)	41,36 (5,08)
OCD	70,34 (4,60)	64,79 (4,84)	70,08 (4,13)	69,00 (4,13)	67,57 (4,72)	69,54 (4,13)	70,21 (4,36)	66,90 (4,49)
Total	58,33 (4,65)	57,38 (4,87)	60,82 (4,17)	58,67 (4,30)	57,86 (4,76)	59,75 (4,23)	59,58 (4,41)	58,02 (4,58)

Table 4. Diagnosis ratings (Depression, Generalized Anxiety and OCD) in the two Decomposability conditions (Global and Local) per Symptoms Order conditions (Depression Primacy and Depression Recency).

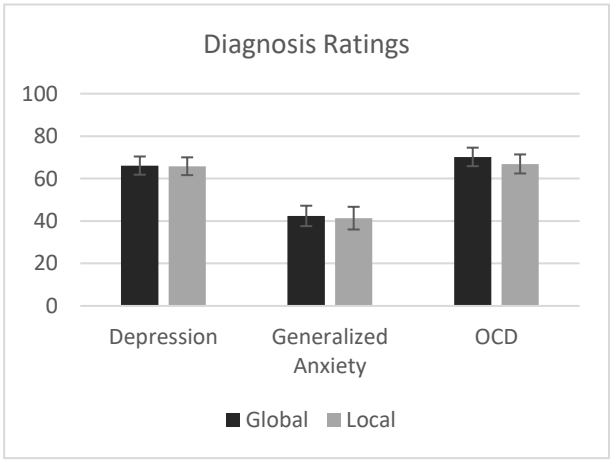

Figure 4. Diagnosis ratings (Depression, Generalized Anxiety and OCD) in the two Decomposability conditions (Global and Local) per Symptoms Order conditions (Depression Primacy and Depression Recency).

Discussion

In Study 4, we presented symptoms of two diagnosis that do not share symptoms, Depression and OCD, which were expected to elicit the generation of two strong and independent hypotheses, leading to a less confirmatory hypothesis strategy in global processing. We found that regardless of whether participants processed information under global or local processing contexts, they tended to consider both the diagnosis of Depression and OCD to the same extent. This suggests that symptoms with high diagnosticity, symptoms that are highly representative of a diagnosis and not expected to occur in another (specific) psychological disorder diagnosis, are not integrated in the other diagnosis. Instead information seems to be used to strengthen a hypothesis of the correspondent diagnosis. This suggests that the content of the information may limit confirmatory tendencies and allow the generation of two strong diagnosis even in global processing conditions. This may be important when local processing is not possible or cannot be induced and should encourage therapists to explore the presence of such high diagnosticity symptoms in their clients.

General Discussion

Research in psychotherapy has been developing models focused on increasing the adaptation of therapist's clinical judgments and decisions to each client (e.g., Persons, 2006), hoping to increase psychotherapy effectiveness and improve client outcomes. These models share the assumption that clinical judgments are testable hypotheses: clinical impressions that are continuously and iteratively adjusted during the therapeutic process. However, hypothesis testing requires resources and time that are limited within the psychotherapy session. The current research explored hypothesis testing strategy within the psychotherapy session and examined how processing client's emotional and behavioral experiences without the opportunity to pause and revise the information flow (as occurs in a psychotherapy session) differs from processing information when there is the opportunity to break information in parts and analyze it sequentially.

The current set of studies tested the tendency for people to use a more confirmatory hypothesis testing strategy when information was processed globally than when information was processed locally. It further explored the mechanisms underlying confirmatory tendencies when information was processed globally and their reduction in local processing. Results showed that when information was received without breaks, (thus there was no possibility to review information) and only one final, global evaluation was given, people tended to give higher likelihood ratings to the focal diagnosis, compared

to conditions where information was given with breaks and included intermediate, local evaluations of diagnosis likelihood. Global processing led participants to prioritize the focal hypothesis of Depression, whereas local processing of information reduced confirmatory tendencies and led participants to consider both the elicited hypothesis of Depression and the alternative hypothesis of Generalized Anxiety (studies 1 to 3).

These findings show evidence that global processing conditions usually present in the psychotherapy session led to confirmatory tendencies and to neglecting alternative diagnosis hypothesis when compared to a local processing.

Moreover, we found that the benefit of decomposing the session did not occur when the diagnosis was generated at the end of the session, when there was no subsequent information that allowed hypothesis testing (study 2), which suggests that local processing of information led to the comparison of subsequent information with the initially elicited diagnosis and thus reduced confidence in the initial diagnosis.

The tendency to confirm the elicited diagnosis in global processing conditions was also clear when session recordings elicited two diagnoses that shared symptoms, in which one diagnosis had a strong causal attribution (Depression) and the other a weak causal attribution (Generalized Anxiety). Yet, in local processing, presenting low diagnostic symptoms of an alternative diagnosis, such as Generalized Anxiety, reduced the tendency to confirm the diagnosis of Depression and led to similar likelihood ratings for both hypothesis (study 3).

We also explored the mechanisms underlying the confirmatory tendencies in global processing. When two diagnosis with different causal strength (Depression-strong and Generalized Anxiety-weak) were elicited, global processing increased confirmatory hypothesis testing in favor of the strong hypothesis, regardless of the order of symptom presentation (Study 3). Low diagnostic symptoms thus seemed to be integrated in the strong causal attribution, but the opposite did not occur. This suggests that global processing seems to promote a holistic non-sequential schema-driven processing, at least when two causal attributions were elicited and one weak diagnosis could be integrated in the strong diagnosis. This led to questions regarding the role of information order given a salient and strong hypothesis, where decomposability is unlikely. For example, in a clinical session where the client is actively describing several episodes in which she struggled to meet new people, knowing that the client experienced an abusive relationship, whether learned at the beginning or at the end of the session, should lead to the same conclusions. In this case, the confirmatory tendency of the global condition favors the possible urgency to solve a past unresolved trauma.

Finally, we found that presenting highly diagnostic symptoms of an alternative hypothesis – that is, symptoms of a diagnosis that did not share symptoms with the initial elicited diagnosis (such as OCD and Depression) – reduced confirmatory tendencies in global processing conditions (Study 4). Results

of Study 4 suggest that even in global processing conditions, when the content of the additional information is hard to integrate in an initially elicited diagnosis and information cannot be used to confirm the initial hypothesis, the alternative diagnosis is considered to the same extent as the initial hypothesis. Study 4 thus seems to show a limit to confirmatory tendencies in global processing conditions.

Interestingly, in Study 4 participants attributed equally high likelihood to the diagnosis of Depression and OCD. This may indicate that evidence was used to generate and support the hypothesis but not to disconfirm the alternative. Moreover, participants judged a lower likelihood for the diagnosis of Generalized Anxiety, a diagnosis that could in fact account for both the symptoms of Depression and OCD. That is, although participants failed to confirm a single hypothesis, which limits hypothesis confirmation tendencies, they were not necessarily processing disconfirmatory evidence or considering alternative hypothesis beyond the diagnoses highly representative of the presented symptoms.

The present findings may thus lead to doubt regarding whether likelihood ratings in the present studies reflect a process of hypothesis generation and testing or rather only a process of hypothesis generation. Because hypothesis generation implied evidence gathering (hypotheses were generated from symptoms) it may be difficult to disentangle the processes of hypothesis generation from hypothesis testing in the paradigm used in the present studies. Indeed, while this paradigm is sensitive to whether a hypothesis was generated, it may have low sensitivity to hypothesis testing because participants did not need to test and commit to one hypothesis. They could assign equally high likelihood ratings to as many hypotheses they wanted rather than being required to reject some hypothesis in favor of another – the process that hypothesis testing can be used for. Thus, differences between global and local processing may reflect differences in the ease with which participants can generate different diagnosis hypotheses. This could also explain why local processing conditions did not lead to recency effects in studies 3 and 4. Symptoms of alternative diagnoses were not being used to discount the initial hypothesis but rather to generate new hypotheses, thus leading to similar likelihood ratings for the generated hypothesis. Nonetheless, in Studies 2 and 3, the observed differences in the likelihood ratings between Generalized Anxiety and OCD diagnoses suggest that Generalized Anxiety may have been at least generated as a hypothesis. Therefore, the observed lower likelihood for the Generalized Anxiety than for focal hypothesis of Depression would be a result of confirmatory hypothesis testing processes. A paradigm where participants had to commit to one hypothesis, or to allocate probabilities to different diagnoses as if they were mutually exclusive, could be more sensitive to the presence of confirmatory and disconfirmatory hypothesis testing processes and clarify these questions.

In any case, our findings indicate that local processing not only reduces confirmatory tendencies when only one hypothesis is generated (Studies 1 and 2) but also facilitates consideration of alternative hypotheses (Studies 3 and 4) when compared to global processing conditions. Previous research has shown that the degree to which a focal hypothesis is overestimated depends on the number and strength of the alternative hypotheses considered, whereby people who generate more alternative hypotheses provide lower and more accurate probability judgments (Dougherty et al., 1997; Dougherty & Hunter, 2003; Koriat, et al.,, 1980; Pennington & Hastie, 1988). The present research shows, however, that consideration of alternative hypotheses is particularly difficult in global processing conditions that promote schema-driven processing of the information (Study 3) and rather, seems to occur only when diagnostic information cannot be accounted for by the focal hypothesis (Study 4).

The difficulty of considering alternative hypotheses observed in Study 3, when one cause was stronger than the other, is especially relevant, since this is a scenario that is likely to occur in a complex clinical case of co-morbidity. One possible way to reduce confirmatory tendencies towards the focal diagnosis may consist of deliberate attempts to elaborate on alternative diagnoses. For instance, instructions to consider alternative perspectives or to consider the opposite have been shown to be effective at reducing overconfidence and anchoring effects (e.g., Anderson, 1981; Fischhoff & Downs, 1997; Koriat et al., 1980; Lord, et al., 1984; Mussweiler, et al., 2000). On the other hand, instructions to deliberately elaborate on alternative hypotheses may induce confirmatory bias towards an alternative plausible diagnosis, since elaboration about the alternative hypothesis increases accessibility of hypothesis relevant features (Chapman & Johnson, 1999; Strack & Mussweiler, 1997).

The demonstrated confirmatory hypothesis testing tendency may also be explained by the uncertainty elicited by the task characteristics of both global and local conditions. Research has shown that finding an explanation for a scenario increases certainty in that explanation (e.g., Koehler, 1991). However, considering several possible explanations reduces confidence in judgments (e.g., Dougherty et al., 1997). In the local condition participants make several judgements, which may thus reduce their confidence in their hypothesis when compared to the global processing condition, where only one judgment was made. If this is the case, our results may also reflect this lack of confidence in the decomposing condition (local processing), rather than less confirmatory hypothesis testing. Further research on the role of perceived confidence and self-esteem should examine this possibility.

We argued that global processing conditions may promote more intuitive processing of information than local processing conditions. Indeed, cognitive capacity and working memory are essential to enable the consideration of alternative hypotheses (e.g., Thomas et al., 2008). However, the present research does not include process measures of attention, working memory or cognitive effort, such as response time, which could contribute to better understanding the mechanisms

underlying hypothesis generation and testing in local and global processing conditions. Future research could manipulate cognitive load or time pressure and examine the effect on the ease of decomposability (for a review see Glöckner & Witteman, 2009).

Moreover, implementation of a local processing context like the present experimental paradigm would be difficult to apply in a natural psychotherapy context. It would require the therapist to interrupt the client after each sentence and take few seconds to analyze each piece of information. Thus, our paradigm would be more helpful as a tool for training decomposition, as an analytic strategy with therapy recordings than as a strategy to be used in therapy sessions with clients. Future research should thus explore alternative strategies for local processing. For instance, manipulating the therapist's abstract and concrete mindset, as suggested by construal level theory (e.g., c) could result in more local processing in more concrete mindsets.

Implications

One of the ultimate aims of the present research is to contribute to the understanding of therapy training. Specifically, potential cognitive pitfalls and biases therapists are at risk of falling prey to and should be aware of. However, understanding the specific mechanisms underlying confirmatory tendencies in diagnosing clinical problems may be insufficient. The current set of studies highlights the potential benefits of local processing to reduce confirmatory tendencies, yet it did not allow us to test the effect of training and tacit learning of how to decompose a session. Research has shown that tacit learning and automatization allow the use of new cognitive skills (for a review see Patterson, et al., 2010; Hogarth, 2010). It remains unclear if therapists would be able to decompose a session presented without interruptions, given practice. Further research should explore the hypothesis testing strategies used when therapists are given the opportunity to decide whether and when to interrupt the client's self-report, which might better mimic the therapy session. The present research also highlights that the benefits of decomposing information occur when the focal hypothesis is presented at the beginning but not when the focal hypothesis occur in the end of a session. Despite this may seem problematic, a psychotherapy process is usually initiated because of some event suggesting a psychological problem (if not a specific diagnosis). Moreover, future research could include feedback on participants' judgements, for instance, whether their judgment was more or less responsive towards client's needs. Research in psychotherapy has shown that giving feedback to therapists about client's progress has benefits in therapy progress and client outcomes (Lambert, 211; Lambert, et al., 2001; Harmon et al., 2007). It would be interesting to explore the mechanisms underlying decomposing information, and the consequent hypothesis testing strategy when feedback is provided.

Related with feedback and the possibility of tacit learning, it would important to investigate the role of expertise in the tendency to, and ease with which, therapists decompose and locally process information.

Some authors have argued that experts develop more accurate intuitions than novices (Kahneman & Frederick, 2005; Klein, 2011). Indeed, while expertise implies more learning opportunities, successful tacit learning depends on the quality of the context and of the feedback it provides (Ericsson, et al., 1993; Hogarth, 2001). Perhaps due to poor learning environments, many authors have found evidence that expertise does not lead to the development of more accurate intuitions and experts do not perform better than novices (e.g., Moxley, et al., 2012; Ericsson, 2007; Tetlock, 2005). The psychotherapy context frequently provides unreliable feedback (Norcross & Wampold, 2011). Psychotherapy feedback, as patients' outcomes, is subject to several bias, for instance Hatfield and colleagues found that only 32% of therapists registered patient worsening in their notes, despite the evident increase of symptoms in the week prior to the therapy session (Hatfield, et al., 2010), which suggests a great confirmatory tendency to achieve client's progress. This should be particularly true in cases of therapeutic processes without objective measures, therapists with heterogenous caseloads, or when the therapeutic process occurs in settings with a high rate of dropout and it is not possible to collect feedback about the client and the case over time (for a review see Lambert, 2010; Tracey, et al., 2014). To overcome potential neglect or misinterpretation of patient's outcomes to inform psychotherapy several models based on systematic feedback systems were developed. One example is the model developed by Lambert and colleagues (e.g., Lambert, et al., 2001) that is based on the on the routine administration of the measure Outcome Questionnaire– 45 (OQ-45; Lambert, et al., , 2004). However, more research is needed the understanding of the mediators and moderators of the feedback efficacy and what are the more effective and implementable decision key factors and tools (Lutz, et al., 2015) and how it should be integrated on psychotherapy training (Reese et al., 2009). Consistent with this, clinical practice research has not demonstrated robustly superior outcomes for more experienced clinicians relative to trainees or less experienced clinicians (Budge et al., 2013; Okiishi et al., 2006; Okiishi, et al., 2003; Wampold & Brown, 2005). Furthermore, Brown and colleagues (2005) found that therapists' prior experience did not explain differences between highly effective therapists and less effective therapists in managed care environments.

Thus, it is unclear whether therapists with more experience are able to develop relatively more accurate intuitions about clients that may help them to generate more and more accurate hypotheses; or whether they are better able to decompose the information than novices, which would, in either case, result in lower confirmatory tendencies.

In fact, experts tend to show more confidence in their judgments and decisions than novices (for a review see Tracey et al., 2014). Consequently, high confidence in hypotheses generated may reduce

the likelihood of considering alternative hypotheses and promote confirmatory hypothesis testing strategies.

Finally, we note that even though confirmatory hypothesis testing may jeopardize case understanding and successful outcomes, a disconfirmatory strategy may not be an ideal approach either. For instance, continuously disconfirming hypotheses may lead to longer therapeutic processes due to the extensive search for additional divergent information. This may be counterproductive for client's urgent needs, increasing the risk of symptom aggravation. The disconfirmatory process, within the session, may also be perceived, by clients, as a lack of attention to significant information, consequently, leading to barriers to the therapeutic alliance, a factor robustly shown to be associated with good therapy outcomes (Horvath, et al., 2011). Further research should explore the impact of disconfirmatory hypothesis testing in therapists' perceived confidence, competence and consequently, the impact on therapeutic alliance.

Conclusion

The present research explores whether the global nature of the psychotherapy session contexts promote confirmatory schema-driven processes in diagnostic judgments when compared to local processing conditions that more likely occur between sessions. Our studies show evidence that local processing conditions reduce confirmatory tendencies in clinical diagnosis judgments when compared to global processing conditions and facilitate consideration of alternative hypothesis. Global processing conditions seem to lead to holistic schema-driven processes that are likely to confirm the focal hypothesis. Only when symptoms cannot be integrated in the focal hypothesis do participants considered alternative hypotheses in global processing conditions. These findings thus show the vulnerabilities of clinical judgments in global processing contexts, that may be particularly problematic in cases of co-morbidity. We further explore local processing conditions as a way to mitigate confirmatory tendencies in clinical judgments. Further research efforts should be made to understand the impact of global and local processing to reduce the confirmatory tendencies in the psychotherapy session at the training and practice levels.

Footnotes

[1] There was no significant interaction between diagnosis and decomposability order ($F(1,76) = 0.63$, $p = .535$, $\eta_{partial}^2 = .008$). We found non-interpretable significant interaction between diagnosis, decomposability and condition order $F(2,75) = 9.35$, $p < .001$, $\eta_{partial}^2 = .111$.

Chapter 4 – Psychological Disorder Diagnosis is no cure for trait inferences

This empirical chapter corresponds to a manuscript submitted to a scientific journal.

Abstract

According to DSM-5, maladaptive behavior stemming from a psychological disorder should not be attributed to personality. Attribution of behavioral symptoms to personality may undermine treatment seeking and therapy outcomes and increase the stigmatization of the mentally ill. Although people adjust dispositional inferences given contextual alternative causes, we propose that beliefs in the stability and controllability of mental illness could lead to confounded representations of personality and psychological disorders. In six studies we tested whether people adjust dispositional inferences given a psychological disorder as they do given a physical impairment. Participants made trait ratings from short behavioral descriptions and corresponding contextual accounts. When the putative cause for the behavior was a psychological disorder, people did not reduce the trait inference to the extent they did when the cause was a physical impairment, except when the psychological disorder was presented as controllable/unstable. This suggests a conflation of psychological disorders with personality.

Keywords: Causal attribution, Trait inferences, Psychological Disorder Diagnosis, Mental illness stigma

Introduction

People diagnosed with a psychological disorder are often treated as though (and sometimes believe) the disorder is part of their personality. This can lead to stigma and discrimination (Corrigan, 2005; Feldman & Crandall, 2007; Hinshaw, 2006; Patrick & Corrigan, 2002; Pescosolido, Monahan, Link, Stueve, & Kikuzawa, 1999) because of the negative associations with mental illness. The extent of this tendency is generally unstudied, as is the path to reducing the phenomenon. In the current research we confirm the strength of the effect by comparing correction of the correspondence bias given a psychology disorder possible cause and a physical disability possible cause.

Standards for clinical psychology diagnosis and practice, such as the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5; American Psychiatric Association [APA], 2013), recommend that certain behaviors be categorized as symptoms of a specific disorder. Accordingly, the American Psychological Association (APA, Recognition of Psychotherapy Effectiveness, 2012) recognizes that psychotherapy has "the purpose of assisting people to modify their behaviors, cognitions, emotions, and/or other personal characteristics in directions that the participants deem desirable" as defined by Norcross (1990, p. 218-220), suggesting that behavioral symptoms are situational phenomena, occurring in the present moment under specific circumstances. Psychological disorders may thus consist of contextual explanations for those behaviors and feelings, however, these standards leave unclear whether symptoms should be attributed to personality or to the disorder as a contextual condition. When psychological disorder diagnoses are not treated as contextual explanations for a person's symptomatic behavior, the attribution of behavioral symptoms to an individual's personality is likely. For instance, while lack of energy or motivation are symptoms of depression (DSM-5; APA, 2013), a depressed patient who describes spending the day lying on the couch may be erroneously perceived as lazy. Even in disorders that are highly associated to personality traits, such as the trait egocentricity in Narcissistic Personality Disorder (e.g., Watson, Clark & Chmielewski, 2008), it is not clear that the tendency to behave and relate with others in a certain way should be attributed to personality rather than the contextual disorder. If such a disorder were to be controlled or overcome, presumably the behaviors associated with the personality trait would be reduced, potentially to such an extent that the person might no longer be considered egocentric by those interacting with them.

Investigating these potential attributions – mental illness symptoms being attributed to an individual's personality – is critical for understanding how stigma impacts treatment seeking (Corrigan, et al., 2014). Moreover, if therapists are prone to these kinds of attributions, it is conceivable that an inaccurate or unhelpful case conceptualization may emerge that would undermine the fit of the treatment plan and therapy outcomes (Eells, et al., 2005).

Stigmatized personality judgments in response to mental illness associated behaviors are likely common, considering the spontaneous nature of inferring traits from behaviors (Uleman, Newman, & Moskowitz, 1996) without intention or awareness (e.g. Todorov & Uleman, 2002). Thus, while spending the day lying on the couch is most appropriately categorized as a behavioral symptom attributable to depression (in a person with depression), the behavior may be spontaneously attributed as a personality trait (e.g. "lazy"; Uleman et al., 1996). Literature has also shown that people often neglect situational factors and automatically attribute behaviors to personality (the correspondence bias; Gilbert, 2002; Gilbert & Jones, 1986; Gilbert & Malone, 1995; Jones & Harris, 1967). In making this attribution, the perceiver neglects alternative contextual explanations (e.g., the individual has a leg injury, just ran a marathon, or suffers from depression).

Prior work has shown that dispositional trait inferences can be adjusted when a contextual alternative cause for the behavior is made salient (Trope & Gaunt, 2000). For example, an individual may be perceived as less lazy for lying on the couch if her leg injury is made salient. However, these adjustments tend to be insufficient (Gilbert, Pelham, & Krull; 1988; Gilbert, 1998, 2002; Gilbert & Malone, 1995; Quattrone, 1982; Trope & Gaunt, 2000), leaving a weaker personality attribution (for a review, see Gawronski, 2004).

Considering the capacity to adjust trait inferences when a contextual cause is salient, a psychological disorder that is used as a contextual explanation for a behavior might lead to the same adjustment that, for instance, a physical impairment leads to. Thus, an individual who spends the day on the couch might not be assumed to be lazy if she has been diagnosed with depression. But do people generally, and experts in clinical psychology (therapists) in particular, use psychological disorders as contextual causes of behaviors to correct dispositional trait attributions?

Mental illness is highly stigmatized (e.g., Hinshaw, 2006) and like other stigmatized groups, we expect dispositional attributions about people with mental illness to be stronger when compared to non-stigmatized groups (e.g., Pettigrew, 1979). Thus, we propose that dispositional attributions to mentally ill individuals should be particularly strong and hard to avoid. Because mental illness is psychological in nature and includes behavioral, emotional and cognitive outcomes, it should be difficult to represent a psychological disorder diagnosis as a circumstantial state, separate from the individual's stable personality. Rather, it is likely to be seen as stable and limited in controllability, which are characteristics that lead to higher stigmatization (Corrigan, 2004; Hegarty & Golden, 2008; Krendl & Freeman, 2017). Thus, we anticipate that individuals will be less likely to correct dispositional attributions for individuals with psychological as compared to physical disorders.

Because of its implications for treatment seeking and treatment quality, it is particularly important to know whether this effect occurs among mental health providers (therapists). Despite efforts to enhance therapists' judgment and decision-making toolbox (e.g., Eells, 2011; Garb, 2005; Jacinto, et

al., 2018; Persons, et al., 2013), the question of whether psychological disorder symptoms are seen as trait indicative behaviors, despite a diagnosis, has not been explored in this population.

Paradigm and studies overview

To test our hypothesis that a psychological disorder leads to lower trait inference adjustment than a physical impairment, we developed an experimental paradigm that directly compares the trait inference adjustment produced by two contextual alternative causes, a physical impairment and a psychological disorder diagnosis. Based on previous research (e.g., Gilbert, 2002), we do not expect a complete adjustment of the trait inference in either case. However, if the diagnosed psychological disorder is treated as a contextual alternative attribution of the behavior, the level of trait inference should be similar to that of a physical impairment, or at least lower than when no plausible explanation is salient. The studies rely on the presentation of short vignettes, describing trait indicative behaviors that could equally likely be symptoms of a psychological disorder or physical impairment. The presentation of the vignette should automatically elicit a high trait inference. Then, by presenting a contextual causal attribution for the behavior, we can examine whether, and to what extent, psychological disorder diagnosis and physical impairment led to reductions in trait inferences (trait inference adjustment).

Six studies explored the role of psychological disorder diagnosis as a contextual alternative attribution for behavior. Studies 1 and 2 tested whether the psychological disorder diagnosis led to similar a trait inference as a physical impairment, both for lay participants (Study 1) and for experts in clinical psychology (Study 2). Studies 3 and 4 explored conditions that could potentially reduce trait inferences in the case of a psychological disorder diagnosis, including making the alternative causal attribution salient (Study 3), and placing the contextual attribution before the trait inference (Study 4). In Study 5, we explored whether participants conflated the trait inference and the psychological disorder diagnosis as causal explanations of the behavior. Finally, in Study 6 we examined whether reducing the perceived stability and increasing the perceived controllability of the psychological diagnosis increased trait inference adjustment.

Method

Pretest of materials: Trait/Diagnosis Vignettes

All studies used the same vignettes. We developed nine vignettes consisting of behavioral descriptions that indicate a trait and simultaneously match a behavioral symptom of a psychological disorder diagnosis, based on the criteria for psychological disorder diagnosis as defined by the DSM-5 (APA, 2013), and a physical impairment. To develop the vignettes, we adapted the behavioral symptoms of psychological disorders as generally described by the DSM-5 (APA, 2013) into concrete daily life behaviors. We selected behavioral symptoms that would be clearly associated with a specific automatic trait inference. We then validated these inferences in pilot testing (see below). Critically, the inference could be similarly associated with a psychological or physical disorder. For example: "*Ana does not take her weekend walks and just lays on the couch most of the time; she keeps watching a show she does not like just to avoid getting up and pick up the remote control*." This vignette indicates the trait "lazy", and also fits both a behavioral symptom of depression and a physical inability to move (e.g., due to an accident) (See Supplemental Materials).

The vignettes were pretested in three phases with a total of 70 participants. First, we asked 35 participants to form a personality impression and describe the person depicted in the vignette in one personality trait. We selected the traits (including synonyms) that were elicited by at least 70% of participants. Second, we pretested the vignettes again, asking the same 35 participants to rate how much the person described had the expected trait (1 = Not at all, 10 = Extremely). We selected the vignettes in which the expected trait was on average equal to or greater than 7 points. Finally, to ensure that there were consensual and accurate lay theories about the diagnoses, we pretested, with an additional 35 participants, the extent to which each vignette was a plausible description of the respective psychological disorder diagnosis ("*Based on this description, how likely is it that Ana has depression?*").

We then selected the six vignettes that best simultaneously indicated the trait and a matching psychological disorder diagnosis. All the vignettes reflected different traits and diagnoses and were presented in the participants' native language (Portuguese). The final vignettes paired: Depression – Lazy; Obsessive Compulsive Disorder – Perfectionist; Generalized Anxiety – Insecure; Paranoid Schizophrenia – Snooper; Narcissistic Personality Disorder Egocentric; Agoraphobia – Fearful.

Study 1

Participants

One hundred and three participants[1] (M_{age} = 24 years, *SD* = 3.16 years), with no knowledge and experience in clinical psychology, completed this experiment in exchange for a 5€ supermarket gift certificate. Participants were Portuguese speaking; experiments were conducted in their native language.

Procedure

Participants were presented with an informed consent form and told that the goal of the experiment was to better understand how people perceive others in different social situations. They were told they would be presented with several descriptions of different individuals and asked to make judgments about each[2].

Trait/Diagnosis Vignettes and Attributions

For each of six trials, participants read one of the vignettes, followed by one of three types of information, manipulating possible causal inference—physical impairment, psychological disorder or irrelevant information (control condition). The control condition (e.g. *Ana eats cereals in the morning*) provided irrelevant information regarding the cause of the described behavior. The physical impairment condition (e.g. *Ana broke her leg last week*) described a physical impairment that could explain the behaviors. Finally, the psychological disorder condition (e.g. *Ana has depression*) presented a psychological disorder diagnosis that fit the behavioral symptoms of the vignette as an alternative causal explanation. Simply put, vignettes should cause a trait inference judgment that could be adjusted according to the attribution information provided following the vignette. Each participant observed two vignettes per attribution (cause) (irrelevant information, physical impairment or psychological disorder diagnosis). The six vignettes and respective attributions were presented in pseudorandom order across participants.

Trait inference

After reading each vignette, participants were asked to rate how much the person could be described by the indicated trait ("*How lazy is* Ana?"; 0 = Not at all, 10 = very much).

Results and Discussion

Trait inferences were entered into a repeated measures ANOVA with attribution condition (irrelevant information, physical impairment, psychological disorder diagnosis) as the independent variable. There was a main effect of attribution, $F(2,102) = 61.38$, $p < .001$, $\eta_{partial}^2 = .38$. As expected, in the physical impairment condition ($M = 5.43$, $SD = 1.99$), trait inferences were lower than in the irrelevant information condition ($M = 8.11$, $SD = 1.52$), $t(102) = 11.82$, $p < .001$, 95%, CI [2.23, 3.13]. In the psychological disorder diagnosis condition ($M = 6.64$, $SD = 2.09$) trait inferences were also lower than in the irrelevant information condition, $t(102) = 6.47$, $p < .001$, 95% CI [1.02, 1.93]. However, when compared to the physical impairment condition, the psychological disorder diagnosis condition led to higher trait inference (i.e., less adjustment), $t(102) = 4.47$, $p < .001$, 95% CI [-1.74, -0.67]. Means for conditions in all studies are included in Table 1.

Thus, we observed that lay people made larger dispositional attributions when given a psychological disorder diagnosis as a possible alternative explanation than when given a physical impairment as a possible alternative explanation. However, there was some adjustment for the psychological diagnoses attribution in comparison with the irrelevant information condition.

Study 2

Study 1 participants were lay people, which may explain the difference in weight given to physical impairments and psychological disorder diagnoses. Therapists, however, as experts in clinical psychology, should be able to make more contextual attributions for symptoms, and lower dispositional inferences. Our goal for Study 2 was to test whether expertise in clinical psychology would lead to less disparity in dispositional attributions between psychological and physical conditions.

Participants

Forty-three therapists[3], Portuguese speaking, (M_{age} = 31 years, SD = 8.08 years) volunteered, without incentive, to participate in this online experiment. All participants reported having clinical practice

experience. Participants' years of clinical psychology practice ranged from 0-6 months to 10-20 years, with the highest frequency of participants reporting 1-3 years of practice (49% of participants). We did not collect data regarding the types of cases in the therapists' caseload or their theoretical approach since all the clinics we contacted require that therapists have an eclectic and integrative background and practice, thereby allowing them to work with any type of case.

Procedure

The methods for Study 2 were the same as described in Study 1[4].

Results and Discussion

The repeated measures ANOVA with trait inferences resulted in a main effect of attribution, $F(2, 42) = 22.70$, $p < .001$, $\eta_{partial}^2 = .35$. As in Study 1, trait inferences were lower in the physical impairment condition ($M = 3.70$, $SD = 1.54$) than in the irrelevant information condition ($M = 6.20$, $SD = 1.33$), $t(42) = 11.00$, $p < .001$, 95% CI [2.05, 2.97] or the psychological disorder diagnosis condition ($M = 5.56$, $SD = 2.59$), $t(42) = 3.99$, $p < .001$, 95% CI [-2.80, -0.92]. Psychological disorder diagnosis did not lead to significantly lower trait inferences than the irrelevant information condition, $t(42) = 1.54$, $p = .132$, 95%, CI [-0.2, 1.51].

These results replicate the main finding of Study 1: individuals, in this case therapists, made more dispositional attributions for individuals with psychological diagnoses than physical diagnoses. Critically, the results of Study 2 suggest that expertise, knowledge and training in clinical psychology do not alleviate this tendency.

Study 3

Previous research has found that contextual information has a greater impact on reducing dispositional trait inferences when that information is salient (Jones, 1990; Trope & Gaunt, 2000). Study 3 was designed to test whether increasing the salience of the contextual alternative explanation and thus the possibility to revise the judgment would facilitate the use of the contextual attribution, resulting in increased adjustment in the psychological disorder diagnosis condition.

Participants

One hundred six participants, Portuguese speaking, without clinical expertise[5] (M_{age} = 24 years, *SD* = 5.5 years) completed this experiment in exchange for a 5€ supermarket gift certificate.

Procedure

In Study 3, rather than presenting the vignettes and attribution information together and asking participants to make one judgment, participants were presented the trait/diagnosis vignette and the attribution separately and were asked to make two trait inference judgments: the first after the vignette, and the second after the attribution information. With this design we intended to increase the salience of the potential cause of the behavior. This design also afforded the opportunity to look directly at the amount of correction (post-pre contextual explanation ratings) participants made.

Results and Discussion

We first conducted the same repeated measure ANOVA (as described in Study 1) on the revised trait inference, the second judgment, which was made after the attribution was presented. We found a main effect of attribution, $F(2, 105) = 44.24$, $p < .001$, $\eta_{partial}^2 = .30$. Planned comparisons revealed that trait inferences were lower in the physical impairment condition (M = 4.85, SD = 1.73) than in the irrelevant information condition (M = 7.08, SD = 1.75), $t(105) = 9.83$, $p < .001$, 95% CI [1.78, 2.68] and the psychological disorder diagnosis condition (M = 6.59, SD = 2.24), $t(105) = 7.17$, $p < .001$, 95% CI [-2.23, -1.26]. Psychological disorder diagnosis condition did not differ significantly from the irrelevant information condition $t(105) = 1.75$, p =.083, 95%, CI [-0.06, 1.03].

To directly test the trait inference adjustment between participants' first and second attributions, we computed the difference between the baseline trait inference (based on the vignette) and the revised trait inference (after learning the attribution)[6]. Accordingly, a repeated measures ANOVA, with 3 conditions (irrelevant/physical impairment/diagnosis), revealed a main effect of attribution $F(2, 105) = 39.76$, $p < .001$, $\eta_{partial}^2 = .28$. Planned comparisons showed there was more adjustment in the physical impairment condition (M = 2.80, SD = 1.93) than in irrelevant information condition (M = .51, SD = 1.48), $t(105) = 10.25$, $p < .001$, 95% CI [-2.73, -1.85]. Results also showed greater adjustment in physical impairment condition than in the psychological disorder diagnosis condition (M = 1.25, SD = 2.26), $t(105) = 5.57$, $p < .001$, 95% CI [1.00, 2.10]. In addition, the psychological diagnosis condition led to

more adjustment than the irrelevant information condition $t(105) = 2.63$, $p = .010$, 95% CI [-1.29, -0.18].

Our results suggest that increasing the salience of a contextual alternative attribution for the behavior may have facilitated trait inference adjustment when the behavior was explained by a psychological disorder diagnosis. However, the psychological disorder diagnosis still did not have an impact equal to that of a physical impairment.

Study 4

In previous studies we observed that, given a psychological disorder diagnosis, participants generally adjusted the trait inference less than they did for physical impairments. Study 4 examined whether trait inferences would be reduced when the behavior was initially attributed to the context -whether psychological disorder diagnosis or physical impairment -before the trait inference was made.

Participants

Seventy-five Portuguese speaking participants with no clinical expertise, (M_{age} = 21 years, SD = 3.17 years) completed this study in exchange for a 5€ supermarket gift certificate.

Procedure

To test Study 4's hypothesis, we reversed the order in which the materials were presented from previous studies. We first presented the attribution information – the behavior cause – followed by the trait/diagnosis indicative vignette. The goal of doing this was to guide the behavior attribution directly to the contextual cause, thereby only making personality a possible alternative cause. Because Study 3 showed that collecting two separate trait judgments did not affect the trait adjustments, we used the initial procedure described in Study 1, with materials reversed but only one trait judgment made.

Results and Discussion

The same repeated measures ANOVA resulted in a main effect of attribution, $F(2, 74) = 25.69$, $p < .001$, $\eta_{partial}^2 = .26$. Planned comparisons revealed trait inferences were lower in the physical impairment condition (M = 5.24, SD = 1.50) than in the irrelevant information condition (M = 7.24, SD = 1.81), t(74)

= 7.50, p <.001, 95% CI [1.47, 2.53] and the psychological disorder diagnosis condition (M = 6.15, SD = 2.28), t(74) = 3.26, p = .002, 95% CI [-1.46, -0.35]. In the psychological disorder condition, participants made marginally significantly lower trait inferences than in the irrelevant information condition t(74) = 3.74, p =.065, 95%, CI [0.51, 1.68].

Presenting the potential causal reason for the behavior before the behavior itself did not seem to change the extent to which participants made trait inferences, as the pattern of results in Study 4 matched those in Studies 1-3, with overall means being in the same range, not lower. Additionally, the physical impairment continued to be used to explain the behavior more that the psychological disorder diagnosis.

Trait inference reduction after a putative contextual cause is given suggests that personality and contextual causes are, to some extent, mutually exclusive (see Ahn & Bailenson, 1996; Fugelsang & Thompson, 2001; Laux, et al., 2010). Therefore, we speculate that the results of Studies 1-4 indicate personality and psychological disorder diagnosis are not mutually exclusive accounts, as opposed to personality and physical impairment, which seem to be (more) mutually exclusive.

Study 5

In Study 5, we tested the hypothesis that there is a causal conflation between psychological disorder and personality. Specifically, if personality and psychological disorder diagnosis are mutually exclusive alternative causes of the (inferred) trait, removing the contextual cause (psychological disorder) once the judgment is made will increase the attribution to personality, thus increasing the trait inference.

Participants

One hundred and three students, Portuguese speaking, (M_{age} = 21 years, SD = 5.05 years) completed this study in exchange for course credit.

Procedure

Study 5 replicated Study 1, with the addition of a second trait inference judgment at the end, in which participants re-evaluated the trait in the absence of the contextual cue. Specifically, after the first trait inference judgment, we asked participants to make a trait inference revising their initial impression presuming no contextual causal explanation. For instance, “How lazy would Ana be if she had not a

had an accident (physical impairment account)/had depression (diagnosis account)/ate cereals (neutral information), assuming she behaved in the same way?".

Results and Discussion

First trait inference judgment

The repeated measures ANOVA conducted on the initial trait inference judgment resulted in a main effect of attribution, $F(2, 102) = 36.26$, $p < .001$, $\eta_{partial}^2 = .26$. As in previous studies, trait inferences were lower in the physical impairment condition ($M = 5.89$, $SD = 2.34$) than in the irrelevant information condition ($M = 7.87$, $SD = 1.30$), $t(102) = 9.27$, $p < .001$, 95% CI [1.56, 2.40], and the psychological disorder diagnosis condition ($M = 7.27$, $SD = 2.17$), $t(102) = 5.09$, $p < .001$, 95% CI [-1.92, -0.84]. Additionally, psychological disorder did lead to lower trait inferences than irrelevant information condition $t(102) = 2.65$, $p = .009$, 95%, CI [0.15, 1.05].

Second trait inference judgment

The repeated measures ANOVA conducted on the second trait inference judgment resulted in no main effect of attribution, $F(2, 102) = 1.50$, $p = .225$, $\eta_{partial}^2 = .02$ (irrelevant information condition: $M = 7.60$, $SD = 1.75$; physical impairment attribution: $M = 7.16$, $SD = 2.11$; psychological disorder diagnosis condition: $M = 7.29$, $SD = 2.28$). Planned comparisons showed that trait inference ratings in the physical impairment condition did not differ from ratings the irrelevant condition, $t(102) = 1.67$, $p = .099$, 95% CI [-0.09, 0.98], and in the psychological disorder condition , $t(102) = .52$, $p = .606$, 95% CI [-0.66, 0.38]. Trait inferences ratings in the psychological disorder condition also did not differ from the irrelevant condition, $t(102) = 1.17$, $p = .238$, 95% CI [-0.21, 0.83].

To directly test the trait inference adjustment across participants' first and second ratings, we computed the difference between the initial and the revised inferences. Accordingly, a repeated measures ANOVA, with 3 conditions (irrelevant/physical impairment/diagnosis) revealed a main effect of attribution, $F(2, 102) = 11.84$, $p < .001$, $\eta_{partial}^2 = .10$. Planned comparisons revealed that the adjustment for the physical impairment condition ($M = -1.26$, $SD = 2.97$) was, as suggested in the previous analysis, significantly larger than in the irrelevant condition ($M = .27$, $SD = 1.19$), $t(102) = 4.71$, $p < .000$, 95% CI [0.89, 2.18], and than in the psychological disorder condition ($M = -.02$, $SD = 3.12$), $t(102) = 3.35$, $p = .001$, 95% CI [-1.98, -0.51]. The adjustment in the psychological disorder condition did not differ from the adjustment in the irrelevant condition $t < 1$, *n.s.*

The results show that only in the physical impairment condition did removing the causal information increase the trait inference. These results suggest that a psychological diagnosis is not a sufficient alternative attribution for behavior and thus support the hypothesis of a conflation between personality traits and psychological disorders as causal explanations of the behavior.

Study 6

In the previous studies we observed that participants generally did not adjust trait inferences based on a psychological disorder diagnosis, suggesting a causal conflation between phycological disorder diagnosis and personality. Literature on mental illness stigma has identified that the perceived stability and controllability of the stigmatizing condition influence stigma (Corrigan, 2006). In fact, both variables communicate whether there is an underlying belief that the stigmatized condition may cease. Following this reasoning, if psychological disorders function in the same way as other stigmas, participants' beliefs that the psychological disorder is likely to cease in the future should lead to lower trait inferences or more adjustment upon learning of the causal explanation of a psychological disorder diagnosis. Therefore, in Study 6 we added information to the psychological disorder condition that suggested that the condition would be likely to cease in the future.

Participants

One hundred and one Portuguese speaking participants with no clinical expertise, (M_{age} = 24,6 years, *SD* = 5.48 years) completed this study in exchange for a 5€ supermarket gift certificate.

Procedure

To test Study 6's hypothesis, we used the initial procedure described in Study 1 and added, in the psychological disorder diagnosis condition, additional information stating that the person was currently enrolled in a treatment with a very high success rate that would likely lead to the cessation of the psychological disorder in approximately two months. This additional information implied that the person was seeking help (high controllability) and would be cured (low stability).

Results and Discussion

The repeated measures ANOVA on trait inferences resulted in a main effect of attribution, $F(2, 100) = 50.02$, $p < .001$, $\eta_{partial}^2 = .33$. Planned comparisons revealed trait inferences were lower in the physical impairment condition ($M = 5.38$, $SD = 2.12$) than in the irrelevant information condition ($M = 7.71$, $SD = 1.81$), $t(100) = 9.92$, $p < .001$, 95% CI [1.87, 2.80]. Contrary to previous studies, trait inferences in the physical impairment condition were not lower than in the psychological disorder condition ($M = 5.74$, $SD = 2.33$), $t(100) = -1.21$, $p = .229$, 95% CI [-0.95, 0.23]. Psychological disorder led to lower trait inferences than the irrelevant information condition, $t(100) = 7.07$, < .001, 95%, CI [1.42, 2.52].

In this study, the trait inference triggered in the psychological disorder condition was similar to that in the physical impairment condition, suggesting that the underlying belief that the psychological disorder would likely cease in the future – that it was not stable – reduced the tendency to make an attribution to personality, much as a physical impairment does.

General Discussion

According to clinical practice guidelines, some behaviors should be categorized as symptoms of a diagnosed psychological disorder (DSM–5, APA, 2013), leaving unclear whether these symptoms should be attributed to personality or to the disorder as a contextual condition. Avoiding incorrect trait inferences may prove particularly difficult if personality and psychological disorder diagnosis are conflated representations. The current set of studies tested this conflation, exploring whether the presence of a psychological disorder diagnosis led to adjustments of the trait inferences to the extent that a physical impairment did.

Across six studies, we found evidence for this causal conflation between personality and psychological disorder diagnosis. When the putative attribution for the behavior was a psychological disorder diagnosis, people did not reduce the negative trait inference to the extent they did when the cause for the behavior was a physical impairment. The tendency to adjust the trait inference more for a physical impairment than a psychological disorder held true with participants with expertise in clinical psychology (Study 2), when the salience of the alternative cause for the behavior was increased (Study 3), when the potential causal explanation was presented before the behavior (Study 4) and when participants were asked to consider how they would rate the trait if the causal explanation were not present (Study 5). Only in the case when participants were informed that the psychological disorder would likely cease in the next few months were the trait inferences based on a psychological disorder not significantly different than those made based on a physical impairment (Study 6).

Potential mechanisms and explanations

The observed conflation between personality traits and psychological disorders as causal explanations of the behavior suggest that psychological disorder diagnoses carry with them the attribution of enduring negative personality traits. This might be explained by the nature of the perceived causal relation between psychological disorders and personality (e.g. Kwaadsteniet & Hagmayer, 2017). Psychological disorders should be viewed as causing behavioral symptoms. However, it might be that psychological disorders are actually perceived as causing personality traits, or that personality traits increase the proclivity for a psychological disorder, which manifests in behaviors. Such causal relations would then lead to high trait inferences from the behavior, even in the presence of a psychological disorder diagnosis. It is worth noting that the present research is based on the assumption that psychological disorders are contextual conditions. Therefore, attributing the associated symptoms to the individual's personality may represent a manifestation of the correspondence bias, in which the disorder is neglected as a potential contextual cause for the symptoms (Gilbert & Malone, 1995).

However, other perspectives posit that the tendency to make high trait inferences (i.e., the tendency to attribute psychological disorder symptoms to personality) may not necessarily expose bias. In fact, robust data has emphasized the strong correlational associations between personality traits and psychopathology (Morey, et. Al., 2012; Naragon-Gainey, & Watson, 2011; Watson, D., Clark, L. A., & Chmielewski, M., 2008). There have been recent research efforts organizing clinical and psychopathology research into a new mental health paradigm, the Hierarchical Taxonomy of Psychopathology (HiTOP) model. In this new system, psychopathology occurs within the spectrum of a certain dimension, varying in degree from adaptative to maladaptive (e.g., social anxiety is a dimension that ranges from comfortable social interactions to distress in nearly all social situations) (see Kotov et al., 2017). In this model, maladaptive traits are considered symptoms that vary in their degree of maladaptiveness (along the spectrum) (Kotov, et. Al., 2017), and a core criteria to classify the individual's psychopathology. Our results showing that high trait inferences are associated with psychological disorders seem to be in accordance with HiTOP, which may lead to the conclusion that behaviors/symptoms are attributable to personality and not to the context. However, in study 6, additional information about the end of the disorder led to reductions in trait inferences in the psychological disorder condition to a similar extent as in the physical impairment condition. This result suggests that behaviors/symptoms may be attributed to the disorder as a contextual cause, when the cause is time limited. If personality traits were believed to be causing the disorder, trait inferences would not be adjusted (reduced) when the disorder ceased, since they would be part of the individual's personality. Instead, from study 6, it seems that knowing the disorder will end reduces personality attributions, thus reducing the correspondence bias. It is worth noting that, if disorders are causing

behaviors/symptoms, removing the putative cause of the behavior (e.g., study 5) could lead to adjustment (reduction of) the trait inferences as in study 6, which was not observed: in Study 5 in the psychological diagnosis condition participants did not adjust their trait inferences more than in the control condition.

The results from the six studies suggest that there is a strong causal conflation between contextual psychological disorder and personality, that disappears when the disorder is deemed unstable/controllable, reducing the attribution to personality, thus favoring a contextual attribution of behaviors. Based on this evidence, we argue that to classify disorders based on traits, even considering the spectrum from adaptive to maladaptive, implies an attribution of the disorder to the individual, which may lead to stigmatization.

Moreover, using traits to understand a series of symptoms may neglect the motivation underlying an individual's behavior. For example, the trait perfectionism may be relevant to understand the clinical expression and treatment of Obsessive Compulsive Disorder (OCD, as defined by APA, 2013) (for a review, see Pinto, et al., 2017), or according to HiTOP, the maladaptive trait "rigid perfectionism" can contribute to understanding and classifying the dimension *Internalizing* as part of the individual's pathology. Perfectionism implies the striving for high accuracy and setting of high performance standards to achieve flawless delivery (Flet, & Hewitt, 2002; Stoeber, 2010). Behaviors that lead to the achievement of these goals may include preoccupations with order, the need for constant monitoring and verification. In fact, these behaviors also consist of relevant criteria to diagnose OCD (DSM-5; APA, 2013), but the motivation underlying these behaviors in OCD is not to achieve high quality, but rather to alleviate a state of anxiety that is unrelated with high quality and achievement (Stoeber, 2010). Thus, using trait inferences to classify symptoms may lead to misleading inferences about individuals' intentionality and agency in their behaviors.

The negative impact of using trait inferences to describe symptoms is also evident when mentally ill people are described with traits that have a strong negative valence and lead to stigmatization, such as inferring laziness from a person with Depression (Brohan, Slade, Clement, & Thornicroft, 2010). The mechanisms underlying this clearly inappropriate trait inference are the same as those underlying the possibly inappropriate trait inference that people with OCD are rigid perfectionists (HiTOP, Kotov et al. 2017). This incongruency leads us to question whether and how trait inferences enhance or compromise case conceptualization and treatment planning by therapists as well as clients' outcomes.

Research on stigma has shown that mental illness is characterized by high perceived controllability (see Corrigan, 2006). This may indicate that the psychological disorder is attributed to the individual's personality. Personality may then be perceived as causing the psychological disorder, thus leading to the high trait inferences from behavioral symptoms in diagnosed individuals observed in the present studies.

Lay theories about the malleability of personality (Molden & Dweck, 2006) may also play a role in the reported findings. Indeed, believing that people's personalities are fixed (entity theories) favors dispositional attributions and reduces sensitivity to contextual explanations for the behavior when compared to believing that people's personalities are malleable (incremental theories) (e.g., Levy, Plaks, & Dweck, 1999). Thus, holding the theory that personality does not change may lead people to disregard psychological disorder diagnoses as states, and instead see them as manifestations of the individual's personality. It could also be that people hold different theories about the stability of psychological disorders (chronic vs. temporal health conditions). If so, believing that psychological disorders are stable, or at least as stable as an individual's personality, could contribute to conflation between psychological disorder and personality (Weiner, 1995).

One future direction for research is to examine lay beliefs about the contextual cause of people's behavior. When trait inferences are associated with the belief that personality is stable – rather than malleable – the potential for change may be compromised (e.g. Dweck, 2008). Further research should test whether the tendency to believe personality is stable leads to higher trait inferences and weaker adjustment to a contextual cause, and believing that personality is malleable is expected to increase the weight given to contextual variables. By manipulating personality stability should contribute to better understand the conflation between personality and psychological disorders.

Future research should disentangle the causal link leading to the conflation of personality traits and psychological disorder diagnosis. Moreover, understanding the conflation between personality and psychological disorder may contribute to explaining some forms of mental illness stigma. Furthermore, the results of Study 6 suggest that a focus on the potential for treatment to control a psychological disorder might be successful in leading people to recognize the difference between personality and mental illness, reducing stigma.

Implications

Most important may be the urgency that derives directly from the implications of these results, notably the clinical practice implications. If individuals assume their friend is lazy when he/she has depression, it would likely impair recognition of the psychological disorder in both the sufferer and his/her community, reducing the likelihood of treatment seeking (Corrigan, 2004). The fact that this bias occurs within the psychotherapy context has further implications for the potential type and quality of treatment that individuals might receive. In the present research, we observed the effect even in a clinically trained sample, although it is important to note that this group seemed to make trait attributions less strongly overall than did the other participant samples, which may have contributed to the results we found (see Table 1 for means). Future research should focus on understanding how

trait inferences influence clinical judgments and practices as well as examine whether there are specific training mechanisms that can help clinicians overcome this cognitive bias. To conclude, we found that people, including therapists, consider physical impairment information a better alternative to personality as an explanation for behavior than psychological disorder diagnosis information when judging behaviors that are commonly linked to personality, except in the case where the likelihood that treatment would control and cease the psychological disorder was made salient. These findings have implications for stigma and potentially even therapeutic alliance and treatment. However, based on the results of Study 2, attention should be paid early in clinical training to the possibility of this bias operating among clinicians. Applied research would do well to examine the impact of this bias both in the clinical setting and in our everyday social interactions with an emphasis on finding ways to mitigate the impact of this bias on individuals with mental illness, especially by focusing on the potential to cease a psychological disorder.

Footnotes

[1] We conducted power analyses to determine sample size. Based on a small effect size ($\eta_{partial2}$=0.01), the minimum required sample size was N = 161; and based on a medium effect size ($\eta^{partial2}$=0.06), the minimum required was N = 27 (Cohen, 1988; Miles & Shevlin, 2001). The sample size in Study 1 was determined based on these calculations, previous research and the available budget to compensate participants.

[2]For this and subsequent studies, no information regarding previous history of mental illness was requested, since trait inferences are basic and automatic processes that are expected to occur regardless past history of mental health (e.g, Krendl & Cassidy, 2017).

[3] We conducted power analyses to determine sample size of Study 2. Based on the effect size of Study 1 ($\eta_{partial2}$= .38), the minimum required sample size was N = 6.

[4]All the following studies used the materials and measures described in Study 1; and in all the following studies, the conditions were counterbalanced as in Study 1.

[5] We conducted power analyses to determine sample size of Studies 3 to 5. Based on the effect size of Study 2 ($\eta_{partial2}$= .35), the minimum required sample size was N = 7.

[6]In the first judgment, the trait inference ratings were based on the behavioral information of the vignettes, without the attribution. A repeated measures ANOVA, with 3 continuation conditions (irrelevant/physical impairment/diagnosis), revealed no effect of attribution $F < 1$ (information condition: M = 7.62, SD = 1.46; physical impairment condition: M = 7.71, SD = 1.52; and psychological disorder condition: M = 7.79, SD = 1.40).

		Irrelevant Information	Psychological disorder diagnosis	Physical Impairment
		M (SD)	M (SD)	M (SD)
Study 1		8.11 (1.52)	6.64 (2.09)	5.43 (1.99)
Study 2		6.21 (1.33)	5.56 (2.59)	3.70 (1.54)
Study 3 (second rating)		7.08 (1.75)	6.59 (2.24)	4.85 (1.73)
Study 4		7.24 (1.81)	6.15 (2.28)	5.24 (1.49)
Study 5	Cause present	7.87 (1.30)	7.27 (2.17)	5.89 (2.34)
	Cause absent	7.60 (1.75)	7.29 (2.28)	7.16 (2.11)
Study 6		7.71 (1.81)	5.74 (2.33)	5.38 (2.12)

Table 1. Means and standard deviations of trait inference ratings in the conditions of irrelevant information, psychological disorder diagnosis, and physical impairment, from study 1 to study 6.

Chapter 5 – Body over mind: The effect of causal attribution on perceived competence and euthanasia acceptance

This empirical chapter corresponds to a manuscript submitted to a scientific journal.

Abstract

Body and mind are often seen as separate parts of a person and this dualism is present in several judgments. Euthanasia is not accepted for cases of mental illness to the extent it is for cases of physical illness, even when it meets the legal criteria, including unbearable suffering and no prospect of treatment or improvement of symptoms. In a context of end-of-life decisions, we test whether lay participants hold this distinction and differentiate between mental and physical suffering in perceived competence and euthanasia acceptance. In eight studies, participants read vignettes describing unbearable suffering with either a psychological or physical cause and judged the patient's depressive trait and their competence to request euthanasia. Participants also chose whether or not to grant the right of euthanasia. We found that a mental illness diagnosis led to lower perceived competence and lower acceptance of euthanasia than a physical illness diagnosis (studies 1A,1B); that social proximity did not decrease this gap (1C) and a causal attribution of suffering better explains the gap than diagnostic labels do (studies 2A, 2B, 2C). We also found that the gap between mental and physical illness in euthanasia acceptance persisted in conditions of possible treatment of the trauma (cause) and of the suffering (effect) (studies 3, 4). However, manipulating the controllability of the suffering (effect) influenced the gap mental and physical illness in perceived competence (study 4). The need to understand causal beliefs of psychological phenomena is explored.

Keywords: Euthanasia, Causal attribution, Mental illness, Perceived competence, End-of-life decision

Introduction

Body and mind are often seen as separate parts of a person. This dualism is present in several social and health judgments, including in the context of end-of-life decisions. Euthanasia has been a controversial subject that often leads to questioning the requests itself as the criteria underlying its acceptance, or rejection, and usually leads to a discussion about morality, resilience, human dignity, religion, free-will, and determination. Euthanasia requests from patients diagnosed with mental illness have been especially subject to a strong debate and controversy. In most of the countries where euthanasia is accepted, only cases of physical illness are considered valid conditions to request euthanasia. Of the seven countries in which some form of euthanasia is legal, only in 1, Belgium, is euthanasia for cases of mental suffering explicitly accepted, which suggests a very different way of understanding physical and psychological pain experiences when one has to decide whether to accept or deny euthanasia requests. This disparity between body and mind seems to be based on the assumption that chronic physical suffering and chronic psychological suffering have different impacts on an individual's well-being and life satisfaction. The need to distinguish suffering deriving from the body and from the mind to make end-of-life decisions is particularly interesting since most euthanasia requests refer to unbearable psychological suffering, regardless of whether it is caused by a physical or mental illness. The present research aims to understand the role of the mental illness – physical illness discrepancy in perceptions of psychological suffering when a definite decision, such as an end-of-life decision, has to be made.

Although criteria to legally allow euthanasia differ across countries, the legislation in these countries rely on the same core principles such as the absence of a known cure or treatment for the patient's condition, the patient's awareness regarding the consequences of euthanasia and the patient's perception that suffering is extreme and unbearable ("Euthanasia and assisted dying rates are soaring. But where are they legal?," 2019, The Guardian). For instance, in the Netherlands (Euthanasia act, Haan, 2002), the decision to allow legal euthanasia requires judgments about the patient's competence, where it is mandatory "that the physician is convinced that the patient has made a voluntary and well-considered request for euthanasia and that he is suffering unbearably and hopelessly." (page 66) (Haan, 2002). Moreover, it is required that physician "1. informed the patient about the situation he was in and about his prospects, 2. and the patient hold the conviction that there was no other reasonable solution for the situation he was in," (page 68).

Even though the criteria concerning the lack of known treatments is based on scientific and technical knowledge, the decision that suffering is unbearable relies on trusting the individuals' perception of their own suffering. These criteria imply that practitioners and decision makers believe that the described suffering is experienced as unbearable and that they make predictions that the

suffering will not decrease or cease. It also implies that practitioners and decision makers believe that patients are aware of the lack of alternative options and are aware of , and accurate about, their future prospects if they continue living in those conditions. It also implies that decision makers believe and value patients' will and motivation to end their life given those conditions.

Based on these criteria, granting euthanasia is a decision that seems to, and should, depend more on judgments about the patients' emotional and cognitive experience and suffering, than on the nature of the illness or impairment condition to which suffering is attributed. These criteria seem to be aligned with research that demonstrates how physical pain may be translated into psychological suffering. As suggested by Loeser and Melzack (1999), and recommended by the International Association of the Study of Pain (IASP), pain is best defined as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage" (definition by the Merskey & Bogduk, 1994), a definition that includes both perceptual and psychological experience. Moreover, research has been emphasizing how brain circuits of physical pain overlap the circuits associated to psychological suffering like social rejection (Eisenberger & Lieberman, 2004; Eisenberger, et al., 2003) and that patient assessment should be based on an integrative approach that considers both physical and psychological factors (e.g., Turk & Okifuji, 1999). This integrative approach is especially relevant for cases of chronical pain, which are often associated to intense psychological suffering and mental illness (e.g., Banks, & Kerns, 1996; Gatchel, et al., 2007).

Considering that suffering is a psychological experience regardless of its biological or psychosocial cause, research has shown a body-mind duality in the perceived competence of patients. People with mental illness are perceived to have less competence to make life decisions or to be less able to do "real work" than people with physical illness (Jones et al., 1984; Rabiner, et al., 1983; Corrigan & Watson, 2002). These perceptions may culminate in benevolent reactions or acts of discrimination that include taking away self-determination (an authority figure makes decisions about the person's goals and the types of treatment to attain these goals) (see Corrigan & Watson, 2002). For instance, studies based on psychiatrists' attitudes have shown the belief in the effect of mental disorder on capacity, with many believing that any mental disorder should result in an automatic finding of incompetence (Fabrega, 1995). However, research on the assessment of competence to consent to treatment is inconclusive (Grisso & Applebaum, 1995; Vollman, et al., 2003). For instance, Grisso and Applebaum (1995) focused on identifying impaired decision-making abilities of patients hospitalized with Schizophrenia, Major Depression and Ischemic Heart Disease, as defined by the legal standards of competence to consent to treatment. Measuring competence with three different measures, they found that different competence measures led to different proportions of impaired patients being considered competent and to the definition of different groups of competence-impaired people, depending on the use of measures as single standards or as a compound of measures (Grisso &

Applebaum, 1995). Moreover, competence assessment based on clinical assessment seems to lead to higher ratings of perceived competence to make treatment decisions than a validated measure, such as The MacArthur Competence Assessment Tool-Treatment (MacCAT-T, Grisso & Applebaum, 1998) does (Vollman et al., 2003). Furthermore, different mental illness diagnoses are associated with different competence assessments, both in quantitative instruments and clinical assessments, as in the case of patients with Depression that are assessed with higher competence than patients with Schizophrenia (e.g., Vollman et al., 2003; Grisso & Appelbaum, 1995; Appelbaum et al. 1999). Although schizophrenia is more consensually associated with low assessments of competence to make decisions, the literature is not conclusive regarding the competence of individuals with psychological disorders to make important decisions more generally. And research is far from concluding that individuals with Depression cannot make decisions about their life (Strunk, eu al., 2006), nor their treatment (Schuklenk & van de Vathorst, 2015).

The perceived impaired decision-making abilities of people with Depression may be related to the pessimistic thinking associated with Depression (APA, 2015). Based on this symptom, one can argue that a patient with Depression may have a biased prediction about future suffering. However, research has robustly demonstrated that predicting future emotional experiences is often biased by the current mood (Wilson & Gilbert, 2003; Loewenstein, 2007). This perspective leads us to argue that if predictions of future suffering are impaired by current depressive mood and suffering, then this competence is expected to be impaired for all patients describing unbearable suffering, whether the cause of the suffering is physical or psychological. In fact, people with higher depressive symptomatology can make optimal decisions, regarding their well-being and adaptative behaviors, when they use decision tools that facilitate the perception and rational thinking about the value of the different future scenarios (Leykin, et al., 2011).

In the present research, we examine how psychological and physical causes of suffering affect perceptions of patient's competence to make a decision to end their life and the likelihood of approving a euthanasia request from such a the patient.. Specifically, we argue that the underlying belief that mental illness impairs reasoning and the ability to make sound decisions, leads people to perceive mentally ill people as having low competence to decide to end their life, and to low approval of euthanasia requests. Thus, we hypothesize that if unbearable suffering is perceived to have a psychological cause, it will lead to lower perceived competence to make decisions and to lower approval of euthanasia, compared with unbearable suffering with a physical cause.

Main paradigm

To test our hypothesis that a psychological source of suffering leads to lower perceived competence and lower approval of euthanasia than a physical source of identically described unbearable suffering, we developed an experimental paradigm that directly compares the perceived competence, moral acceptance and the decision of granting (vs. denying) the right to euthanasia in cases of chronic mental illness versus chronic physical illness. The studies rely on the presentation of short vignettes, describing intense and unbearable suffering, with no prospects of improvement, thus meeting the criteria for requesting euthanasia. While vignettes were expected to elicit the perception of unbearable suffering, the subsequent information regarding a psychological or physical causal attribution for that suffering was expected to activate different attributional beliefs.

Eight studies test the effect of a psychological cause of unbearable suffering on a patient's perceived competence and euthanasia approval compared to a physical cause. Study 1A tests whether the diagnosis of mental illness leads to lower perceived competence and lower euthanasia approval than a diagnosis of physical illness. Studies 1B and 1C test the same hypothesis respectively in a culturally different sample and in response to a socially close patient, by asking participants to imagine a close person is requesting euthanasia. In Study 2A, we focus on the effect of causal attribution in perceptions of unbearable suffering by directly comparing psychological and physical causes of suffering rather than comparing clinical diagnoses. In studies 2B and 2C we disentangle the impact of causal attribution from the impact of the diagnosis of mental illness in culturally different samples. Studies 3 and 4 examine the underlying mechanisms of causal attribution beliefs in the perceptions of unbearable suffering by manipulating the stability and controllability of the causes of suffering (Study 3) and of the suffering itself (Study 4).

Study 1A

Study 1A was designed to test the hypothesis that a diagnosis of mental illness leads to lower perceived competence of patients to make end-of-life decisions and to lower approval of euthanasia for those patients, than the diagnosis of physical illness.

Participants

Sixty-five (54 female, 11 male) participants (M_{age} = 25 years, SD_{age} = 6.39 years), voluntarily, without incentives, completed this experiment online. Participants were Portuguese speaking and the experiments were conducted in their native language.

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Materials

We developed four similar vignettes consisting of a patient describing behaviors and feelings of intense and unbearable suffering. The descriptions were based on the criteria for Major Depression as defined by the DSM-5 (American Psychiatric Association [APA], 2013). Patients' reports explicitly mentioned that their suffering was unbearable and described the extreme lack of motivation to continue living, without mentioning any diagnosis. All the patients described were women.

Each vignette was followed by additional information about the patient, consisting of a diagnosis associated with the described unbearable suffering. The diagnosis was either a mental illness diagnosis, Treatment Resistant Major Depression (e.g. "*Sara has Major Depression, for nine years, with no prospect of improvement*") or a physical illness diagnosis, Quadriplegia (e.g. "*Sara is quadriplegic due to a lesion she suffered nine years ago*"). Both diagnoses were described as chronic, constant and with no prospect of improvement due do treatment resistance. Participants were presented with two cases of mental illness diagnosis and two cases of physical illness diagnosis.

Procedure

Participants were informed that they would be partaking in a study to understand people's perceptions regarding euthanasia. Participants were told they would be presented with information about fictional patients who requested euthanasia and to imagine the cases were real. Then participants were presented with a brief definition of euthanasia and the criteria to grant it to ensure that all participants understood the concept of euthanasia in a similar way. Participants were asked to presume euthanasia was legal in their country and all the required criteria for a legally eligible request were met for the cases described. Participants were asked to answer according to their own personal beliefs and first impressions, even if they felt they would like to have access to more information.

Subsequently, participants were presented with a vignette, in which a patient is describing her experience of intense and unbearable suffering and subsequent diagnosis accounting for the described suffering, followed by a diagnosis. Finally, participants were asked to make four different judgments about the target patient and a final decision regarding the euthanasia request.

Participants were asked to rate the depressive mood, as a state, of the person requesting euthanasia ("*How depressed is Sara at the present time?"*; 1 = Not depressed at all, 9 = Extremely depressed) and to rate how depressive the person was as a personality trait ("*Thinking in terms of personality, how depressive is Sara?*; 1 = Not depressed at all, 9 = Extremely depressed). Then, participants were asked to rate the moral acceptability of the euthanasia request ("*How morally acceptable is it that Sara resorts to physician assisted death?*"; 1 = Not acceptable at all, 7 = Totally acceptable) and to rate the perceived competence of the person requesting euthanasia ("*How able is Sara to make the decision to resort to physician assisted death?*"; 1 = Not able at all, 7 = Totally able). Finally, participants were asked to make a final decision about the case presented. Participants were asked to decide whether they would grant, to that patient, the right to euthanasia, considering the case met the required criteria to be legally eligible ("*Do you grant Sara the right to a physician assisted death*?").

Each participant was presented with a total of four vignettes describing equivalent unbearable suffering, two followed by a diagnosis of mental illness and two followed by a diagnosis of physical illness. The order of the diagnosis conditions was randomly presented.

Results and Discussion

For each judgment (state depression, trait depression, moral acceptability and competence), ratings were entered into a repeated measures ANOVA with diagnosis (Mental Illness vs. Physical Illness) as the independent variable within participants[1].

We found a main effect of diagnosis in all ratings: state depression, trait depression, moral acceptability and competence. We found a main effect of diagnosis on state depression, $F(1,64) = 35.60$, $p < .001$, $\eta^2_{partial} = .357$ ($M_{MI} = 8.40$, $SE_{MI} = 0.09$; $M_{PI} = 7.65$, $SE_{PI} = 0.11$), in which the mental illness diagnosis led to higher depression state ratings than did the physical illness diagnosis. We also found a main effect of diagnosis on trait ratings of depression, in which the mental illness diagnosis led to higher trait ratings of depression than the physical illness diagnosis, $F(1,64) = 68.98$, $p < .001$, $\eta^2_{partial} = .523$ ($M_{MI} = 7.20$, $SE_{MI} = 0.22$; $M_{PI} = 5.65$, $SE_{PI} = 0.22$). See Table 1 for means in studies 1B and 1C.

When comparing moral acceptance of euthanasia, we also found a main effect of diagnosis in acceptance ratings, $F(1,64) = 16.91$, $p < .001$, $\eta^2_{partial} = .209$ ($M_{MI} = 3.32$, $SE_{MI} = 0.22$; $M_{PI} = 4.27$, $SE_{PI} = 0.22$). Euthanasia was considered less morally acceptable when the person was diagnosed with mental illness than when she was diagnosed with a physical illness. We found a main effect of diagnosis in the perceived competence of patients, $F(1,64) = 113.35$, $p < .001$, $\eta^2_{partial} = .639$ ($M_{MI} = 2.80$, $SE_{MI} = 0.18$; $M_{PI} = 4.82$, $SE_{PI} = 0.18$). When unbearable suffering was labeled as caused by a mental illness, patients were perceived to have lower competence to make the decision to request euthanasia than when

unbearable suffering was labeled as caused by a physical illness. See Table 1 for means in studies 1B and 1C.

A McNemar's test determined that associating unbearable suffering with a mental illness diagnosis led to a lower proportion of approving euthanasia (granting euthanasia) (22%) than associating it with a physical illness diagnosis (38%, $p < .001$).

Results suggest that individuals with a mental illness diagnosis are less likely to be granted the right to euthanasia than individuals with a physical illness diagnosis, although both conditions meet the criteria for euthanasia and report the same unbearable suffering, revealing a mind-body gap in euthanasia judgments and acceptance.

Results further suggest that a mental illness diagnosis causing psychological suffering led participants to infer higher state and trait depression than a physical illness diagnosis. It is interesting to note that the tendency for mental illness diagnosis to lead to a higher Depression trait may suggest dispositional attribution of Depression, and consequently may suggests the dispositional attribution of the suffering and be indicative of an overlap between psychological disorder and personality.

Importantly, mental illness diagnosis led to lower perceived competence than physical illness diagnosis, indicating that people with mental illness were perceived as less capable of making important life decisions, which may contribute to the belief that ending life is not morally acceptable. This result is congruent with previous research on mental illness stigma (Jones et al., 1984; Rabiner, et al., 1983; Corrigan & Watson, 2002). Altogether, these results provide further evidence of mental health stigma in judgments and decisions regarding euthanasia.

Study 1B

Study 1A found a discrepancy between mind and body in euthanasia request approval. Participants judge higher Depression state and trait, lower competence to decide, and lower approval of euthanasia to targets with a mental-illness diagnosis than to targets with a physical illness diagnosis, even though both conditions described the same unbearable suffering. These findings may be seen as a manifestation of mental health stigma. Mental health stigma and negative attitudes towards mental illness have been found to be stronger for collectivistic cultures (e.g., Papadopoulos, et al., 2013) which may render a cultural phenomenon the observed mind-body gap in euthanasia decisions. Participants from study 1A were from Portugal, a western collectivistic culture, study 1B thus attempts to replicate study 1A in a more individualistic culture, specifically the USA (e.g., Matsumoto, et al., 2008).

Participants

Eighty-one (39 female) US American participants (M_{age} = 34 years, SD_{age} = 10.63) were recruited from Mechanical Turk and completed the experiment online.

Procedure

In order to replicate study 1A in a culturally different sample, study 1B uses the exact materials and method of study 1A in a sample of English speakers from USA. All materials were translated from Portuguese to English.

Results and Discussion

We conducted the same analysis as in study 1A. We found a main effect of diagnosis in all ratings: state depression, trait depression, moral acceptability and competence. We found a main effect of diagnosis on state depression, in which the mental illness diagnosis led to higher state depression ratings than the physical illness diagnosis, $F(1,80) = 18.202$, $p < .001$, $\eta^2_{partial} = .185$ ($M_{MI} = 8.19$, $SE_{MI} = 0.16$; $M_{PI} = 7.69$, $SE_{PI} = 0.17$). We also found a main effect of diagnosis on trait depression, in which the mental illness diagnosis led to higher trait depression ratings than the physical diagnosis, $F(1,80) = 18.00$, $p < .001$, $\eta^2_{partial} = .184$ ($M_{MI} = 7.83$, $SE_{MI} = 0.17$; $M_{PI} = 7.17$, $SE_{PI} = 0.19$). See Table 1 for means of studies 1A and 1C.

When comparing the acceptance of euthanasia, we found a main effect of diagnosis, demonstrating that euthanasia was considered less morally acceptable when the patient was diagnosed with a mental illness than a physical one, $F(1,80) = 32.64$, $p < .001$, $\eta^2_{partial} = .290$ ($M_{MI} = 2.81$, $SE_{MI} = 0.20$; $M_{PI} = 3.89$, $SE_{PI} = 0.22$). We also found a main effect of diagnosis in the patient's perceived competence, in which a mental illness diagnosis led to lower perceived competence to make a euthanasia decision than a physical illness diagnosis did, $F(1,80) = 61.16$, $p < .001$, $\eta^2_{partial} = .433$ ($M_{MI} = 3.89$, $SE_{MI} = 0.21$; $M_{PI} = 5.17$, $SE_{PI} = 0.19$). See Table 1 for means of studies 1A and 1C.

An exact McNemar's test determined that associating unbearable suffering to a mental illness led to a lower proportion of approving euthanasia (granting euthanasia) (18%) than associating it with a physical illness diagnosis (42%, $p < .001$).

Results of study 1B replicate results obtained in study 1A, indicating that a mental illness diagnosis led to infer higher state depression and to stronger dispositional attributions of depression (higher trait depression); and led to lower competence judgments than a physical illness diagnosis. Importantly we found that moral acceptance and decisions to grant euthanasia were lower for targets with a

mental illness diagnosis than for those with a physical illness diagnosis. Study 1B found evidence of the mind-body gap in judgments regarding euthanasia decisions in a more individualistic culture, despite previous evidence that such cultures tend to hold more positive attitudes towards mental health than collectivistic cultures (e.g., Papadopoulos et al., 2013). This suggests that the discrepancy between mind and body may be common and strong.

Study 1C

In studies 1A and 1B we examined how a mental illness diagnosis might lead to lower perceived competence and lower approval of euthanasia than physical illness diagnosis. Study 1C explores another possible limit to the gap, testing whether the observed differences in the perception of mentally and physically ill patients in judgments and decisions regarding euthanasia are mitigated for socially close patients.

Stigmatizing attitudes and bias have been shown to reduce with familiarity and social proximity to the mentally ill person (e.g., Angermeyer et al., 2004; Corrigan et al., 2003). Additionally, because psychological distance increases the weight of global and abstract representations in judgments, it also leads to the neglect of local contextual causes and thus to stronger global dispositional attributions (e.g., Nussbaum, Trope & Liberman, 2003). We thus test whether judging a psychologically closer patient could eliminate the gap between mental and physical illness in dispositional attributions, perceived competence and moral acceptance of euthanasia.

Participants

Fifty (39 female, 11 male) students from the Faculty of Psychology, University of Lisbon, (M_{age} = 22, SD_{age} = 4.05) completed this study in their native language (Portuguese), to meet course requirements.

Procedure

Study 1C used the method and materials of study 1A, with an added instruction to elicit social proximity towards the patients described. Before the vignettes were presented, participants were asked to think about a close friend or relative who they loved dearly and would not want to see suffer. Participants were given 30 seconds to think about a close person and were then asked to write the name or nickname of the person they had thought about. Subsequently, participants were asked to imagine that the patients depicted in the following scenarios were as close to them as the person they had thought about.

Results and Discussion

We conducted the same analysis of study 1A. For each judgment (state depression, trait depression, moral acceptability and competence) ratings were entered into a repeated measures ANOVA with diagnosis (Mental Illness vs. Physical Illness) as the independent variable within participants.

We found a main effect of diagnosis in all ratings: state depression, trait depression, moral acceptability and competence. We found a main effect of diagnosis in the state depression, in which the mental illness led to higher judgement of depressive mood than the physical illness, $F(1,49) = 8.64$, $p = .005$, $\eta^2_{partial} = .150$ ($M_{MI} = 7.94$, $SE_{MI} = 0.16$; $M_{PI} = 7.43$, $SE_{PI} = 0.21$). We also found a main effect of diagnosis in the trait depression, in which the mental illness diagnosis led to higher trait inferences than the physical diagnosis, $F(1,49) = 26.20$, $p < .001$, $\eta^2_{partial} = .348$ ($M_{MI} = 7.28$, $SE_{MI} = 0.21$; $M_{PI} = 6.15$, $SE_{PI} = 0.29$). See Table 1 for means of studies 1A and 1B.

Moreover, we found a main effect of diagnosis in judgments of moral acceptance of euthanasia, in which euthanasia was considered less morally acceptable when the person was diagnosed with mental illness than when the person was diagnosed with physical illness, $F(1,49) = 8.84$, $p = .005$, $\eta^2_{partial} = .153$ ($M_{MI} = 3.40$, $SE_{MI} = 0.27$; $M_{PI} = 4.04$, $SE_{PI} = 0.26$). We also found a main effect of diagnosis in the perceived competence, in which patients diagnosed with a mental illness were perceived as less competent to make decisions about their life then patients diagnosed with a physical illness, $F(1,49) = 30.10$, $p < .001$, $\eta^2_{partial} = .380$ ($M_{MI} = 3.15$, $SE_{MI} = 0.23$; $M_{PI} = 4.56$, $SE_{PI} = 0.23$). See Table 1 for means of studies 1A and 1B.

A McNemar's test determined that associating unbearable suffering with a psychological disorder led to lower acceptance of euthanasia (granting euthanasia) (28%) than attributing associating it with a physical illness diagnosis (39%, $p < .001$).

Ratings	Study 1A			Study 1B			Study 1C		
	MI *Mean (SE)*	*PI* *Mean (SE)*	T *Mean (SE)*	MI *Mean (SE)*	PI *Mean (SE)*	T *Mean (SE)*	MI *Mean (SE)*	PI *Mean (SE)*	T *Mean (SE)*
State Depression	8.40 *(0.09)*	7.65 *(0.11)*	8.03 *(0.10)*	8.19 *(0.16)*	7.69 *(0.17)*	7.94 *(0.16)*	7.94 *(0.16)*	7.43 *(0.21)*	7.69 *(0.18)*
Trait Depression	7.20 *(0.22)*	5.65 *(0.22)*	6.42 *(0.22)*	7.83 *(0.17)*	7.17 *(0.19)*	7.50 *(0.18)*	7.28 *(0.21)*	6.15 *(0.29)*	6.72 *(0.25)*
Moral Acceptance	3.32 *(0.22)*	4.27 *(0.22)*	3.79 *(0.22)*	2.81 *(0.20)*	3.89 *(0.22)*	3.35 *(0.21)*	3.40 *(0.27)*	4.04 *(0.26)*	3.72 *(0.26)*
Competence	2.80 *(0.18)*	4.82 *(0.18)*	3.81 *(0.18)*	3.89 *(0.21)*	5.17 *(0.19)*	4.53 *(0.20)*	3.15 *(0.23)*	4.56 *(0.23)*	3.86 *(0.23)*

Table 1. Ratings of state Depression, trait Depression, moral acceptance and competence in the diagnosis conditions, mental illness and physical illness, in studies 1A, 1B and 1C (MI – Mental Illness; PI – Physical Illness; T – Total).

Study 1C showed that increasing social proximity did not eliminate the bias towards perceived unbearable suffering when people are diagnosed with mental illness. In study 1C we replicate the pattern of results of studies 1A and 1B, in which the diagnosis of mental illness leads to lower perceived competence and lower acceptance of euthanasia. Moreover, these results suggest that mental illness was not perceived as a contextual explanation for suffering at the extent of physical illness, as participants made high inferences of trait Depression to individuals diagnosed with Depression than to individuals diagnosed with quadriplegia. Although this result seems obvious, since Major Depression is a chronic illness, it may not necessarily be a trait.

Study 1C showed that increasing social proximity did not eliminate the bias towards perceived unbearable suffering when people are diagnosed with mental illness. In study 1C we replicate the pattern of results of studies 1A and 1B, in which the diagnosis of mental illness leads to lower perceived competence and lower acceptance of euthanasia. Moreover, participants made higher inferences of trait for individuals diagnosed with depression than to individuals diagnosed with quadriplegia. Although this result seems obvious because Major Depression is a chronic illness and implies stability, it may not necessarily imply a personality trait. Diagnoses, of both mental and physical illness, are thought to represent a contextualized display of symptoms, whereby making high trait inferences may suggest the neglect of the contextual nature of the mental illness diagnosis. Nonetheless, results of studies 1A, 1B and 1C leave unclear whether suffering is actually being attributed to patient's personality; whether participants are simply rating the level to which the patient has the diagnosis; or whether this finding reflects demand effects.

Important for the understanding of the effects of psychological and physical attributions of unbearable suffering, studies 1A, 1B, and 1C elicited psychological or physical representations of unbearable suffering through diagnoses of mental and physical illnesses. Diagnosis labels include a set of beliefs associated to the symptoms and the illness itself that increase stigma responses (Corrigan, 2007), including perceptions of low competence that may contribute to lower acceptance of euthanasia. Because a diagnosis consist of descriptions of symptoms without identifying a cause for those symptoms, it is unclear whether the reported gap resulted from stigmatized diagnosis labels or from the actual causes of suffering. In other words, diagnosis labels do not allow the disentangling of the role of psychological and physical causal attribution from the descriptive diagnosis.

Study 2A

Studies 1A, 1B and 1C found that when patients requesting euthanasia were diagnosed with a mental illness, such as Treatment Resistant Major Depression, they were perceived to have lower competence and their euthanasia was less likely to be approved than when patients were diagnosed with a physical illness, such as Quadriplegia.

Although these findings suggest that different causes of suffering led to different acceptance of euthanasia, the diagnosis does not implicate a psychological or physical cause for the disorder or suffering. Additionally, diagnoses, as labels, activate specific beliefs about the diagnosed person including personality traits and beliefs about the controllability and responsibility for the health condition (e.g., Corrigan, 2007), that can be different and independent from the beliefs associated to the causal attribution of the suffering to a psychological or physical cause.

Moreover, because mental illness diagnosis labels mostly describe experiential feelings and behavioral symptoms (in comparison with physical illness labels that mostly refer to changes in the body and physical functionality), such labels may facilitate attributions of the suffering condition and symptoms to the individual's personality rather than to contextual causes. Such dispositional attributions of the experience of suffering may increase perceptions that the individual is responsible and has control over the suffering. Considering that the decision of acceptance (or denial) of euthanasia implies predictions about how the suffering will evolve, beliefs of high controllability and high responsibility of suffering could lead to low acceptance of euthanasia. On the other hand, beliefs about how symptoms and symptomatic behavior evolve may be associated to the cause of suffering, independent of the associated diagnosis. Research has shown that beliefs about the curability of a disorder and the efficacy of various treatments (medicine vs. therapy) are influenced by people's views of psychological disorders as being caused by biological or psychosocial events (e.g., Goldstein & Rosselli, 2003; Iselin & Addis, 2003; Kuppin & Carpiano, 2006; Luk & Bond, 1992; Ahn et al., 2009). This is especially relevant considering that biological accounts of behavior are believed to be fixed, while psychological accounts are perceived to be malleable (e.g., Lebowitz et al., 2013). That is, even in the absence of diagnosis labels, psychological causes of suffering may be perceived as more controllable than physical causes which may result in higher perceived responsibility for the suffering condition when it is caused by a psychosocial cause. Consequently, euthanasia requested by individuals experiencing unbearable suffering with a psychosocial origin may be less likely to be accepted than when the individual's suffering has a physical cause.

In three experiments, studies 2A, B and C, we explore the role of cause of suffering in the perceived competence, perceptions of future suffering, and euthanasia acceptance. In study 2A rather than presenting a physical or psychological diagnosis label, individuals' suffering is described as having been

caused by either a psychological trauma or a physical trauma. Study 2B explores the role of the physical or psychological causal attribution of the suffering condition while manipulating the presence of a psychological disorder diagnosis label. Study 2C replicates study 2B in a culturally different sample.

Participants

Seventy-four (48 female, 26 male) participants (M_{age} = 24, SD = 5.42), voluntarily, without incentives, completed this experiment.

Procedure

Study 2A used the same materials and method of Study 1A. However, in study 2, to manipulate the cause of suffering, instead of presenting the diagnosis of psychological and physical illness, we directly presented the psychological and physical causes for the unbearable suffering. Vignettes were followed by an explicit account of psychological trauma (e.g. "*Sara had a car accident a decade ago where she lost her only child.*") or physical trauma (e.g. "*Sara had a car accident a decade ago and had her mobility reduced by 70%.*").

In addition to the measures of studies 1, for each vignette, participants were asked to rate the person's current and future suffering ("*How much do you think Sara is currently suffering?"*; 1 = Not at all, 7 = Extreme suffering; "*How much do you think Sara will suffer in the future?*"; 1 = Not at all, 7 = Extreme suffering).

Results and discussion

For each variable (state depression, trait depression, current suffering, and future suffering moral acceptability competence,) ratings were entered into a repeated measures ANOVA with causal attribution (Psychological Trauma vs. Physical Trauma) as the independent within-participants variable.

We found a main effect of cause of suffering in all ratings, except for the state depression variable. We found a main effect of cause of suffering in the state depression, $F(1,74) = 8.12$, $p = .006$, $\eta^2_{partial} = .100$, in which psychological trauma led to higher state depression ratings than a physical trauma ($M_{PsyT} = 8.05$, $SE_{PsyT} = 0.13$; $M_{PhyT} = 7.61$, $SE_{PhysT} = 0.13$). However, we found no main effect of cause of suffering in trait depression, $F(1,73) = 1.55$, $p = .217$, $\eta^2_{partial} = .021$ ($M_{PsyT} = 6.66$, $SE_{PsyT} = 0.19$; $M_{PhyT} = 6.35$, $SE_{PhysT} = 0.22$). See Table 2 for means of all ratings.

We also found a main effect of causal attribution in the perceived current suffering, $F(1,73) = 7.18$, $p = .009$, $\eta^2_{partial} = .089$, in which attributing suffering to a psychological trauma led participants to rate the target as suffering more at the present moment than did attributing the suffering to a physical trauma ($M_{PsyT} = 5.74$, $SE_{PsyT} = 0.12$; $M_{PhyT} = 5.35$, $SE_{PhysT} = 0.12$). However, we found no main effect of causal attribution in perceived future suffering, $F(1,73) = 2.39$, $p = .126$, $\eta^2_{partial} = .032$ ($M_{PsyT} = 4.50$, $SE_{PsyT} = 0.16$; $M_{PhyT} = 4.85$, $SE_{PhysT} = 0.16$). See Table 2 for means of all ratings.

When comparing judgments of moral acceptance of euthanasia, we found a main effect of cause of suffering, in which euthanasia was considered less morally acceptable when the unbearable suffering was caused by a psychological trauma than by a physical trauma, $F(1,73) = 22.38$, $p < .001$, $\eta^2_{partial} = .235$ ($M_{PsyT} = 2.35$, $SE_{PsyT} = 0.20$; $M_{PhyT} = 3.58$, $SE_{PhysT} = 0.20$). Individuals were also perceived as less competent when their suffering was caused by psychological trauma than by a physical trauma, $F(1,73) = 13.17$, $p = .001$, $\eta^2_{partial} = .153$ ($M_{PsyT} = 3.24$, $SE_{PsyT} = 0.25$; $M_{PhyT} = 4.39$, $SE_{PhysT} = 0.23$). See Table 2 for means of all ratings.

A McNemar's test determined that explaining unbearable suffering with a psychological trauma led to lower proportion of acceptance of euthanasia (granting euthanasia) (12 %) than explaining suffering with a physical trauma (30 %, $p < .001$).

	Psychological Trauma *Mean* *(SE)*	Physical Trauma *Mean* *(SE)*	Total *Mean* *(SE)*
State Depression	8.05 *(0.13)*	7.61 *(0.12)*	7.83 *(0.13)*
Trait Depression	6.66 *(0.19)*	6.35 *(0.22)*	6.51 *(0.21)*
Current Suffering	5.74 *(0.12)*	5.35 *(0.12)*	5.55 *(0.12)*
Future Suffering	4.50 *(0.16)*	4.85 *(0.16)*	4.68 *(0.16)*
Moral Acceptance	2.35 *(0.20)*	3.58 *(0.20)*	2.97 *(0.20)*
Competence	3.24 *(0.25)*	4.39 *(0.23)*	3.82 *(0.24)*

Table 2. Ratings of state depression, trait depression, competence and moral acceptance in the cause of suffering conditions, psychological trauma and physical trauma.

The mind-body gap found in study 2A was similar to the gap found in studies 1A, 1B and 1C for the variables state depression, perceived competence and acceptance of euthanasia. In study 2A we

demonstrated that manipulating the cause of the unbearable suffering affects state depression but does not affect trait depression. This may suggest that the tendency to make high inferences of a depressive trait, and consequently dispositional attribution of Depression, seems to disappear when the suffering is explained by a psychological specific cause instead of a mental illness label. We further showed that current suffering was higher in psychological cause condition, and there was no significant difference in physical cause condition. We also demonstrated that the discrepancy in perceived competence and euthanasia acceptance between physical and psychological conditions occurs in the absence of mental illness diagnosis and can be explained by the nature of the cause the unbearable suffering. However, the design of study 2A lacks a condition that directly compares the cause of suffering with diagnosis condition. This prevented drawing a conclusion regarding whether the disparity in perceived competence and euthanasia acceptance depends on the nature of the causal attribution when an illness diagnosis is present.

Study 2B

Study 2B was designed to disentangle the impact of the cause of the suffering from the illness diagnosis by manipulating the cause of the suffering condition (psychological trauma vs. physical trauma) and the presence or absence of a mental illness diagnosis, in two conditions of label (Diagnosis vs. No-Diagnosis).

Participants

Seventy (48 female, 22 male) lay participants (M_{age} = 27, *SD* = 6.31) completed this study in exchange for a 5€ supermarket gift certificate.

Procedure

Study 2B used similar materials and method to that of study 2A. However, in study 2B, we added a mental illness diagnosis condition. For half the participants, all vignettes presented were followed by additional information that the person depicted had treatment resistant major depression disorder (e.g. "*Sara has Major Depression, with no prospect of improvement for nine years*") (mental illness condition) and for the other half of participants there was no mention to mental illness diagnosis. Moreover, in study 2B, participants were presented with only one vignette per cause of suffering condition.

The design was a 2 X 2 factorial with Mental illness diagnosis (Depression Diagnosis vs. No Depression Diagnosis) as a between-participants factor, and Cause of suffering (psychological trauma vs. physical trauma) as within-participant factor.

Results and Discussion

For each variable (state depression, trait depression, current suffering, future suffering, moral acceptability, and competence), ratings were entered into a repeated measures ANOVA with Mental illness diagnosis (Depression Diagnosis vs. No Depression Diagnosis) as a between-participant independent variable and Cause of suffering (psychological trauma vs. physical trauma) as a within-participant independent variable.

We found a main effect of cause of suffering in state depression which was the reverse of results from previous studies, $F(1,68) = 14.32$, $p < .001$, $\eta^2_{partial} = .174$, indicating more depressive moods for psychological than for physical trauma ($M_{PsyT} = 6.48$, $SE_{PsyT} = 0.13$; $M_{PhyT} = 6.06$, $SE_{PhysT} = 0.10$). No main effect of mental illness diagnosis, $F(1,68) = .122$ $p = .728$, $\eta^2_{partial} = .002$ ($M_{Diag} = 6.31$, $SE_{NoDiag} = 0.14$; $M_{Diag} = 6.24$, $SE_{NoDiag} = 0.14$), and no interaction effect between cause of suffering and diagnosis, $F(1,68) = 1.36$, $p = .248$, $\eta^2_{partial} = .020$, were found. See Table 3 for means.

For the trait depression, we found no main effect of cause of suffering, $F(1,68) = 2.57$, $p = .113$, $\eta^2_{partial} = .036$ ($M_{PsyT} = 5.55$, $SE_{PsyT} = 0.13$; $M_{PhyT} = 5.36$, $SE_{PhysT} = 0.14$), no main effect of diagnosis, $F(1,68) = .119$, $p = .731$, $\eta^2_{partial} = .002$ ($M_{Diag} = 5.42$, $SE_{Diag} = 0.17$; $M_{NoDiag} = 5.50$, $SE_{NoDiag} = 0.17$), but found an interaction effect between cause of suffering and diagnosis, $F(1,68) = 4.379$, $p = .040$, $\eta^2_{partial} = .061$. Pairwise comparisons showed that when the person was diagnosed with Depression, explaining the suffering with a psychological trauma led to higher depressive trait ratings than a physical cause of suffering ($p = .010$). However, there were no differences in depressive trait attributions between psychological and physical causes when the person was not diagnosed with Depression ($p = .734$)**.** See Table 3 for means. This result indicates that after an individual is labeled with a Depression diagnosis, depressive trait inferences about that individual become sensitive to the nature of the cause of the individual's suffering, otherwise such causal explanations of suffering do not seem to imply dispositional inferences of depression.

Moreover, we found a main effect of cause of suffering on perceived current suffering, $F(1, 67) = 15.46$, $p < .001$, $\eta^2_{partial} = .188$, showing higher suffering for the psychological trauma than for the physical trauma ($M_{PsyT} = 5.81$, $SE_{PsyT} = 0.12$; $M_{PhyT} = 5.36$, $SE_{PhysT} = 0.13$). We found no main effect of mental illness diagnosis, $F(1, 67) = .07$, $p = .798$, $\eta^2_{partial} = .001$ ($M_{Diag} = 5.61$, $SE_{Diag} = 0.15$; $M_{NoDiag} = 5.56$, $SE_{NoDiag} = 0.15$), and no interaction effect between cause of suffering and diagnosis $F(1, 67) = .48$, $p = .493$, $\eta^2_{partial} = .007$. However, for perceived future suffering, we found a main effect of cause of

suffering, $F(1, 68) = 5.23$, $p = .025$, $\eta^2_{partial} = .072$, indicating lower future suffering for the psychological trauma than for the physical trauma, reversing the pattern of results observed for the present suffering and replicating Study 2A ($M_{PsyT} = 4.75$, $SE_{PsyT} = 0.14$; $M_{PhyT} = 5.07$, $SE_{PhysT} = 0.14$). There was also a marginal main effect of diagnosis, $F(1,68) = 3.12$, $p = .082$, $\eta^2_{partial} = .044$, suggesting higher future suffering for diagnosed individuals ($M_{Diag} = 5.13$, $SE_{Diag} = 0.18$; $M_{NoDiag} = 4.69$, $SE_{NoDiag} = 0.14$), but no interaction effect between cause and diagnosis was found, $F(1,68) = .23$, $p = .633$, $\eta^2_{partial} = .003$. See Table 5 for means.

We also found a main effect of cause of suffering in moral acceptance of euthanasia, in which euthanasia was considered less morally acceptable when the unbearable suffering was caused by a psychological trauma then to a physical trauma, $F(1,68) = 21.52$, $p < .001$, $\eta^2_{partial} = .240$ ($M_{PsyT} = 2.48$, $SE_{PsyT} = 0.20$; $M_{PhyT} = 3.24$, $SE_{PhysT} = 0.21$). We found no main effect of diagnosis, $F(1,68) = 1.65$, $p = .204$, $\eta^2_{partial} = .024$ ($M_{Diag} = 3.10$, $SE_{Diag} = 0.26$; $M_{NoDiag} = 2.62$, $SE_{NoDiag} = 0.27$), and no interaction effect between cause of suffering and mental illness diagnosis, $F(1,68) = 2.06$, $p = .256$, $\eta^2_{partial} = .029$. Although we found no interaction effect, presenting the diagnosis of Depression led to marginally higher acceptance of euthanasia when suffering was caused by a psychological trauma than when no label was present ($p = .075$), but the presentation of a diagnosis of Depression did not change euthanasia acceptance when suffering was caused by a physical trauma ($p = .564$). See Table 3 for means. This result suggests that diagnosis labels may in part legitimate the patient's suffering with a psychological cause. We found a main effect of cause of suffering in perceived competence, that replicated previous studies, $F(1,68) = 21.50$, $p < .001$, $\eta^2_{partial} = .240$, in which explaining suffering with a psychological trauma led to lower competence ratings than explaining suffering with a physical trauma ($M_{PsyT} = 3.07$, $SE_{PsyT} = 0.23$; $M_{PhyT} = 3.96$, $SE_{PhysT} = 0.23$). This was qualified by an interaction effect between cause of suffering and diagnosis, $F(1,68) = 4.21$, $p = .044$, $\eta^2_{partial} = .058$, which suggested that the discrepancy in competence judgments between physical and psychological causes is larger when no mental illness label categorizes the unbearable suffering. We found no main effect of mental illness diagnosis, $F(1,68) = .043$, $p = .836$, $\eta^2_{partial} = .001$($M_{Diag} = 3.47$, $SE_{Diag} = 0.29$; $M_{NoDiag} = 3.56$, $SE_{NoDiag} = 0.30$). See Table 3 for means. In other words, when judging an individual's competence, a depression diagnosis label reduced judgments' sensitivity to the psychological or physical nature of the experienced suffering, suggesting that the Depression label may entail a representation of the patient's competence that is independent of the cause of suffering.

A McNemar test showed that participants were less likely to accept euthanasia when suffering was caused by a psychological trauma (8,6%, $p = .021$) then by a physical trauma (20%). An independent samples t-test showed no difference in the proportion of decisions accepting euthanasia in the diagnosis ($M = .19$ $SE = 0.06$) versus non-diagnosis ($M = .09$, $SE = 0.04$, $t(68) = 1.51$ $p = .135$, 95% [-0.25, 0.03]) condition. A chi-square test found no difference in the proportion of euthanasia

acceptance between the Depression diagnosis condition and the no diagnosis condition for either Psychological (Depression: 13.9%, p = .282; no diagnosis condition: 2.9%) or Physical (Depression: 25%, p = .573; no diagnosis condition:14.7%) cause.

	Diagnosis		No Diagnosis		Total		Total	
	PsyT	PhyT	PsyT	PhyT	Diag	No-Diag	PsyT	PhyT
	Mean (SE)	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*
State Depression	6.58	6.03	6.38	6.09	6.31	6.24	6.48	6.06
	(0.18)	*(0.15)*	*(0.18)*	*(0.15)*	*(0.14)*	*(0.14)*	*(0.13)*	*(0.10)*
Trait Depression	5.64	5.19	5.47	5.53	5.42	5.50	5.55	5.36
	(0.18)	*(0.19)*	*(0.19)*	*(0.20)*	*(0.17)*	*(0.17)*	*(0.13)*	*(0.14)*
Current Suffering	5.80	5.43	5.82	5.29	5.61	5.56	5.81	5.36
	(0.16)	*(0.18)*	*(0.17)*	*(0.18)*	*(0.15)*	*(0.15)*	*(0.12)*	*(0.13)*
Future Suffering	5.00	5.25	4.50	4.88	5.13	4.69	4.75	5.07
	(0.20)	*(0.20)*	*(0.20)*	*(0.20)*	*(0.17)*	*(0.18)*	*(0.14)*	*(0.14)*
Moral Acceptance	2.83	3.36	2.12	3.12	3.10	2.62	2.48	3.24
	(0.28)	*(0.29)*	*(0.28)*	*(0.30)*	*(0.26)*	*(0.27)*	*(0.20)*	*(0.21)*
Competence	3.22	3.72	2.91	4.21	3.47	3.56	3.07	3.96
	(0.32)	*(0.32)*	*(0.33)*	*(0.33)*	*(0.29)*	*(0.30)*	*(0.23)*	*(0.23)*

Table 3. Ratings of state depression, trait depression, current suffering, future suffering, competence and moral acceptance, in the cause of suffering conditions, psychological trauma and physical trauma, for the condition of Depression diagnosis and Non-Diagnosis.

Results of study 2B replicate results obtained in study 2A, indicating that when the experienced suffering is explained by a psychological cause, people judge individuals requesting euthanasia as less competent and are less likely to approve euthanasia than when their suffering is caused by a physical cause.

Additionally, we showed that mental illness diagnosis led to higher inferences of trait Depression in the psychological trauma condition, which suggests the tendency to make dispositional attribution of Depression when a diagnosis is presented may occur when suffering has a psychological representation.

Moreover, study 2B demonstrated that although psychological trauma is perceived to lead to higher present suffering than physical trauma, people expect future suffering to be lower when it is attributed to a psychological trauma. That is, suffering resulting from a psychological trauma is

expected to decrease more in the future than suffering caused by a physical trauma, which may contribute to the lower acceptance of euthanasia in the psychological trauma condition.

These results also showed that judgments of competence based are reduced when the individual is labeled with Depression diagnosis, regardless the cause was a psychological or physical trauma). This suggests that Depression diagnosis may directly contribute for an individual's low perceived competence.In other words, differentiation between mind and body was smaller in competence judgements when there was a Depression diagnosis than when there was not.

Study 2C

Study 2C was intended to replicate results of study 2B in a culturally different sample. Study 2C thus uses a more individualistic sample of US participants.

Participants

Eighty-one participants (37 female, 44 male) lay participants (M_{age} = 39,5 years, SD = 10.55) from mTurk platform completed this study in exchange of a monetary compensation.

Procedure

Study 2C is an exact replication of study 2B, except for the language in which it was completed.

Results and Discussion

For each variable (state Depression, trait Depression, current suffering, and future suffering, moral acceptability, and competence) ratings were entered into a repeated measures ANOVA with mental illness diagnosis (Depression Diagnosis vs. No Depression Diagnosis) as between-participants independent variable and cause of suffering (psychological trauma vs. physical trauma) as within-participants independent variable.

We found no main effect of cause of suffering in state depression, $F(1,79) = .47$, $p = .497$, $\eta^2_{partial} = .006$ ($M_{PsyT} = 6.57$, $SE_{PsyT} = 0.09$; $M_{PhyT} = 6.50$, $SE_{PhysT} = 0.08$); no main effect of mental illness diagnosis, $F(1,79) = 2.27$, $p = .135$, $\eta^2_{partial} = .028$ ($M_{Diag} = 6.64$, $SE_{Diag} = 0.10$; $M_{NoDiag} = 6.42$, $SE_{NoDiag} = 0.11$); and no interaction effect between cause of suffering and diagnosis, $F(1,79) = .47$, $p = .497$, $\eta^2_{partial} = .006$. For the trait depression, we found no main effect of cause of suffering, $F(1,79) = 2.31$, $p = .133$, $\eta^2_{partial} = .028$ ($M_{PsyT} = 6.21$, $SE_{PsyT} = 0.11$; $M_{PhyT} = 6.05$, $SE_{PhysT} = 0.11$). However the main effect of mental illness

diagnosis was significant, $F(1,79) = 6.06$, $p = .016$, $\eta^2_{partial} = .071$, in that the diagnosis of Depression led to higher depressive trait inferences than no-diagnosis ($M_{Diag} = 6.37$, $SE_{Diag} = 0.13$; $M_{NoDiag} = 5.90$, $SE_{NoDiag} = 0.14$). No interaction was found between cause of suffering and diagnosis, $F(1,79) = .16$, $p = .688$, $\eta^2_{partial} = .002$. See Table 6 for means.

We found no main effect of cause of suffering on perceived current suffering, $F(1, 79) = 1.72$, $p = .194$, $\eta^2_{partial} = .021$ ($M_{PsyT} = 5.37$, $SE_{PsyT} = 0.13$; $M_{PhyT} = 5.48$, $SE_{PhysT} = 0.12$); no main effect of mental illness diagnosis, $F(1, 79) = 1.63$, $p = .206$, $\eta^2_{partial} = .020$ ($M_{Diag} = 5.71$, $SE_{Diag} = 0.16$; $M_{NoDiag} = 5.28$, $SE_{NoDiag} = 0.16$); and no interaction effect between cause and diagnosis $F(1, 79) = .57$, $p = .453$, $\eta^2_{partial} = .007$. See Table 4 for means.

For perceived future suffering, we found a main effect of cause of suffering condition, $F(1, 79) = 42.19$, $p < .001$, $\eta^2_{partial} = .348$, showing lower perceived future suffering for the psychological trauma than for the physical trauma ($M_{PsyT} = 4.18$, $SE_{PsyT} = 0.14$; $M_{PhyT} = 5.05$, $SE_{PhysT} = 0.12$). There was no main effect of mental illness diagnosis, $F(1,79) = .29$, $p = .594$, $\eta^2_{partial} = .004$ ($M_{Diag} = 4.68$, $SE_{Diag} = 0.17$; $M_{NoDiag} = 4.55$, $SE_{NoDiag} = 0.17$); and no interaction effect between cause and diagnosis, $F(1,79) = .058$, $p = .811$, $\eta^2_{partial} = .001$. See Table 4 for means.

We found a main effect of cause of suffering on moral acceptance of euthanasia, in which euthanasia was less morally acceptable when the unbearable suffering was caused by a psychological trauma than to a physical trauma, $F(1,79) = 22.59$, $p < .001$, $\eta^2_{partial} = .222$ ($M_{PsyT} = 2.50$, $SE_{PsyT} = 0.21$; $M_{PhyT} = 3.18$, $SE_{PhysT} = 0.22$). We found no main effect of mental illness diagnosis $F(1,79) = .830$, $p = .365$, $\eta^2_{partial} = .010$ ($M_{Diag} = 3.02$, $SE_{Diag} = 0.28$; $M_{NoDiag} = 2.65$, $SE_{NoDiag} = 0.20$); and no interaction effect between cause of suffering and mental illness diagnosis $F(1,79) = 189$, $p = .665$, $\eta^2_{partial} = .002$. See Table 4 for means.

We found a main effect of cause of suffering in perceived competence, $F(1,79) = 15.77$, $p < .001$, $\eta^2_{partial} = .166$, in which suffering resulting from a psychological trauma led to lower perceived competence than suffering resulting from a physical trauma ($M_{PsyT} = 3.75$, $SE_{PsyT} = 0.18$; $M_{PhyT} = 4.62$, $SE_{PhysT} = 0,16$). We found no main effect of mental illness diagnosis, $F(1,79) = .67$, $p = .417$, $\eta^2_{partial} = .008$ ($M_{Diag} = 4.26$, $SE_{Diag} = 0.17$; $M_{NoDiag} = 3.95$, $SE_{NoDiag} = 0.18$); and no interaction effect between cause of suffering and mental illness diagnosis, $F(1,79) = .29$, $p = .590$, $\eta^2_{partial} = .004$. See Table 4 for means.

A McNemar test shows that participants were more likely to accept euthanasia when suffering caused by a physical trauma (25.9%, $p = .004$) then when suffering was caused by a psychological trauma (11.1%). An independent samples t-test showed no difference in the proportion of decisions accepting euthanasia for diagnosis ($M = .20$ $SE = 0.05$) and non-diagnosis conditions ($M = .17$, $SE = 0.05$, $t(79) = 0.49$ $p = .619$, 95% [-0.18, 0.11]). A chi-square test determined that unbearable suffering caused by a psychological trauma did not lead to differences in the proportion of euthanasia acceptance

between the Depression diagnosis condition (11.9%, p = .814) and the no diagnosis condition (10.3%). When suffering was caused by a physical trauma, the proportion of euthanasia acceptance also did not differ between the depression diagnosis condition (28.6%, p = .573) and the no diagnosis condition (23.1,5%).

	Diagnosis		No Diagnosis		Total		Total	
	PsyT	PhyT	PsyT	PhyT	Diag	No-Diag	PsyT	PhyT
	Mean (SE)	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*
State Depression	6.64	6.64	6.49	6.36	6.64	6.42	6.57	6.50
	(0.13)	*(0.11)*	*(0.13)*	*(0.12)*	*(0.10)*	*(0.11)*	*(0.09)*	*(0.08)*
Trait Depression	6.43	6.31	6.00	5.80	6.37	5.90	6.21	6.05
	(0.16)	*(0.15)*	*(0.16)*	*(0.15)*	*(0.13)*	*(0.14)*	*(0.11)*	*(0.11)*
Current Suffering	5.48	5.67	5.26	5.31	5.71	5.28	5.37	5.48
	(0.18)	*(0.16)*	*(0.19)*	*(0.17)*	*(0.16)*	*(0.16)*	*(0.13)*	*(0.12)*
Future Suffering	4.26	5.10	4.10	5.00	4.68	4.55	4.18	5.05
	(0.20)	*(0.18)*	*(0.21)*	*(0.19)*	*(0.17)*	*(0.17)*	*(0.14)*	*(0.12)*
Moral Acceptance	2.71	3.33	2.28	3.03	3.02	2.65	2.50	3.18
	(0.29)	*(0.31)*	*(0.30)*	*(0.32)*	*(0.28)*	*(0.29)*	*(0.21)*	*(0.22)*
Competence	3.86	4.67	3.64	4.26.	4.26	3.95	3.75	4.62
	(0.31)	*(0.27)*	*(0.32)*	*(0.28)*	*(0.17)*	*(0.18)*	*(0.18)*	*(0.16)*

Table 4. Ratings of state depression, trait depression, current suffering, future suffering, competence and moral acceptance, in the cause of suffering conditions, psychological trauma and physical trauma, for the conditions of mental illness diagnosis (Depression diagnosis and No-Diagnosis).

Study 2C generally replicates the results of study 2B regarding the role of cause of suffering, thus reinforcing the role of the psychological causal attribution in reducing perceived competence and euthanasia acceptance when compared to physical causal attribution. Indeed, causal attributions of suffering to psychological experiences seem to determine competence judgments, and the moral acceptance of the euthanasia above and beyond labels of mental illness diagnosis.

Interestingly, study 2C replicates the expectation that future suffering will be lower when it is attributed to a psychological trauma than to a physical trauma, indicating that stability beliefs associated to physical and psychological causal attributions of suffering may also contribute to the acceptance of the euthanasia request.

Moreover, in study 2C, which sample consisted of US citizens, we only found a main effect of mental illness diagnosis on the state depression ratings and no significant interactions with cause of

suffering. Specifically, in this study, contrary to study 2B, there associating the diagnosis of Depression to the unbearable suffering did not lead to reduce the inferred current and future suffering. This result may suggest a correction of the gap towards suffering associated to mental illness, considering Major depression is one of the most common mental disorders in the United States (National Survey on Drug Use and Health (NSDUH), 2017).

Study 3

Studies 2A, 2B and 2C showed that patients are perceived as less competent, and their euthanasia requests are less acceptable if the cause of suffering is psychological rather than physical, regardless of the presence of a Depression diagnosis. Suggesting that the body-mind gap in end-of-life decisions for cases of mental illness is better explained by the causal attribution of the behavior than the mental illness label, suggesting the importance of causal beliefs about human behavior in the underlying decision process.

Interestingly, results from studies 2B and 2C showed expectations of lower future suffering for a psychological trauma than for a physical trauma, which suggests that beliefs about the mutability and malleability of the suffering caused by psychological may play a role in perceived competence and acceptance of euthanasia requests. In other words, the discrepancy in people's reactions towards a condition of unbearable suffering caused by a psychological trauma and a condition of unbearable suffering caused by a physical trauma may be explained by the underlying belief system about the mutability of human psychological processes (Lebowitz et al., 2013; Haslam & Kvaale, 2015; Kvaale et al., 2013). While, biological properties are perceived to be more permanent, immutable, and timeless than psychological properties, psychological properties are perceived to be mutable (e.g. Dar-Nimrod & Heine, 2011; Haslam et al., 2004) (e.g., Goldstein & Rosselli, 2003; Iselin & Addis, 2003; Kuppin & Carpiano, 2006; Luk & Bond, 1992). This has relevant implications for treatment, for instance. Research has shown that the more people with Depression attribute their symptoms to biological factors, such as brain abnormalities or genes, the more pessimistic they are about recovery (Lebowitz et al., 2013). Moreover, when people are told that biogenetic properties can change, people change their perceptions towards mental illness. Providing people with education that biology and genes causing Depression could change and be modified through behavior decreased pessimism towards psychological disorder treatment (Lebowitz et al. 2013), a perception that was proven to last at least six weeks after the intervention (Lebowitz & Ahn 2015), suggesting the role of the belief system.

Moreover, such beliefs that mental illness is malleable may contribute to the stigmatizing belief that people diagnosed with mental illness are responsible for causing and their condition and have control over it (Corrigan, 2000; Socall, & Holtgraves, 1992; Weiner et al., 1988; Corrigan & Watson,

2002; Krendl & Freeman, 2019), which may further contribute to the mind-body gap in euthanasia judgements. Hence the importance to understand the mechanism that explains why people hesitate to accept euthanasia to those have psychological suffering that is not partly associated physical impairment.

To test the hypothesis that psychological and physical causal attributions lead to different acceptance of euthanasia requests due to different core beliefs and predictions about stability/malleability of human behavior, in study 3, we manipulated the stability of the cause, the trauma leading to the suffering. We hypothesize that if physical causes are believed to be malleable (like psychological causes are believed to be), then attribution of suffering to physical trauma is expected to lead to lower competence judgments and to lower euthanasia acceptance. Because a psychological cause of suffering is expected to be malleable and controllable, manipulating malleability of suffering in that condition should exert little to no effect on judgments about individuals who's suffering was caused by a psychological trauma.

Participants

Eighty participants (51 female, 29 male) participants (M_{age} = 40,13 years, SD = 11,19), from USA, from mTurk platform completed this study in English, in exchange of monetary compensation.

Procedure

Study 3 used the same method and materials of study 2C with an added condition of trauma treatment. The manipulation of the mental illness diagnosis conditions (Diagnosis vs. No-Diagnosis) was eliminated. In study 3, both patients requesting euthanasia were female war veterans who were victims of an explosion during an attack. In the physical trauma condition, the soldier was in the center of the explosion and lost 80% of her mobility; and in psychological trauma condition the soldier suffered no physical damage from the explosion but was covered by the blood and tissue of a civilian child who was killed in the explosion. To manipulate the stability of the cause of suffering, following the vignette describing the patient's unbearable suffering, participants were presented with additional information about the treatment prognostic of the trauma. In the trauma treatment condition, participants were informed that the person's physical/psychological trauma had high probability of being treated by an experimental procedure that would be implemented in 15 years. In the no-treatment condition, participants were reinforced that the person's physical/psychological trauma would never be treated by any known experimental procedure and the trauma would remain the same during the person's entire life. We stated that the possible treatment would occur in 15 years to ensure

inferences that the fictitious client would continue suffering for a long period of time and requesting euthanasia would be legitimate. Additionally, to reinforce the patients' extreme suffering, their intention to request euthanasia, the acknowledgement of their own condition, and the consequences of the euthanasia request, participants were presented with a patient's declaration of intention to pursue euthanasia. For instance, in the treatment condition, the declaration of intention was "*I know that there is a chance of improvement in the future, but I cannot handle one more day alive, I completely lost the purpose for my life now and I don't want to spend 15 more years in this agony*".

Results and Discussion

For each variable (state depression, trait depression, current suffering, future suffering moral acceptability, and competence) ratings were entered into a repeated measures ANOVA with Trauma Treatment (Treatment vs. No-Treatment) as between-participants variable and cause of suffering (psychological trauma vs. physical trauma) as independent within-participants variable.

We found no main effect of cause of suffering in the state depression, $F(1,78) = .04$, $p = .838$, $\eta^2_{partial} = .001$ ($M_{PsyT} = 6.63$, $SE_{PsyT} = 0.09$; $M_{PhyT} = 6.65$, $SE_{PhysT} = 0.08$); no main effect of treatment, $F(1,78) = .17$, $p = .678$, $\eta^2_{partial} = .002$ ($M_{Treat} = 6.66$, $SE_{Treat} = 0.09$; $M_{NoTreat} = 6.61$, $SE_{NoTreat} = 0.09$); and no interaction effect between cause of suffering and treatment, $F(2,78) = 2.69$, $p = .105$, $\eta^2_{partial} = .033$. See Table 5 for means. For the trait depression, we found no main effect of cause of suffering, $F(1,78) = .58$, $p = .450$, $\eta^2_{partial} = .007$ ($M_{PsyT} = 6.24$, $SE_{PsyT} = 0.12$; $M_{PhyT} = 6.13$, $SE_{PhysT} = 0.12$); no main effect of treatment, $F(1,78) = .52$, $p = .473$, $\eta^2_{partial} = .007$ ($M_{Treat} = 6.11$, $SE_{Treat} = 0.17$; $M_{NoTreat} = 6.25$, $SE_{NoTreat} = 0.17$); but found an interaction effect between cause of suffering and treatment, $F(1,78) = 5.19$, $p = .025$, $\eta^2_{partial} = .062$. Pairwise comparisons showed that when the cause could be treated in 15 years, there were no differences between psychological and physical trauma ($p = .286$) regarding the depressive trait, but the no-treatment condition led to higher trait depression inferences for the psychological trauma ($p = .035$). That is, the mutability of the cause of suffering reduced dispositional attributions of depression for the condition of psychological trauma; and we found a tendency for an increase in trait Depression in the physical trauma condition. See Table 5 for means.

We found a main effect of cause of suffering on perceived current suffering, $F(1, 78) = 13.24$, $p < .001$, $\eta^2_{partial} = 145$, showing that psychological trauma led to lower current suffering than physical trauma ($M_{PsyT} = 5.55$, $SE_{PsyT} = 0.16$; $M_{PhyT} = 6.04$, $SE_{PhysT} = 0.13$). We found no main effect of treatment, $F(1, 78) = .003$, $p = .958$, $\eta^2_{partial} = .000$ ($M_{Treat} = 5.80$, $SE_{Treat} = 0.17$; $M_{NoTreat} = 5.79$, $SE_{NoTreat} = 0.17$); and no interaction effect between cause of suffering and treatment $F(1, 78) = .009$, $p = .962$, $\eta^2_{partial} = .000$. See Table 5 for means.

For perceived future suffering, we found a main effect of cause of suffering, $F(1, 78) = 43.55$, $p < .001$, $\eta^2_{partial} = .358$, showing lower future suffering for the psychological trauma than for the physical trauma ($M_{PsyT} = 4.53$, $SE_{PsyT} = 0.17$; $M_{PhyT} = 5.54$, $SE_{PhysT} = 0.15$). There was no main effect of treatment, $F(1,78) = 2.38$, $p = .127$, $\eta^2_{partial} = .030$ ($M_{Treat} = 4.83$, $SE_{Treat} = 0.22$; $M_{NoTreat} = 5.24$, $SE_{NoTreat} = 0.19$); and no interaction effect between cause of suffering and treatment, $F(1,78) = .06$, $p = .808$, $\eta^2_{partial} = .001$. This result may indicate a strong belief that the trauma causing the suffering in past would not impact the suffering the future. In other words, it may reflect the belief that unbearable suffering is complex and depends on ongoing causes maintaining the suffering and not does not only depend on the trauma initial trauma that precipitated the suffering. See Table 5 for means.

When comparing judgments of moral acceptance of the request for euthanasia, we found a main effect of cause of suffering, in which requests for euthanasia were considered less morally acceptable when the unbearable suffering was caused by a psychological trauma than by a physical trauma, $F(1,78) = 35.08$, $p < .001$, $\eta^2_{partial} = .310$ ($M_{PsyT} = 2.88$, $SE_{PsyT} = 0.23$; $M_{PhyT} = 4.11$, $SE_{PhysT} = 024$). We found no main effect of treatment $F(1,78) = .862$, $p = .356$, $\eta^2_{partial} = .011$ ($M_{Treat} = 3.30$, $SE_{Treat} = 0.33$; $M_{NoTreat} = 3.69$, $SE_{NoTreat} = 0.33$); and no interaction effect between cause of suffering and treatment $F(1,78) = .61$, $p = .439$, $\eta^2_{partial} = .008$. See Table 5 for means.

We found a main effect of cause of suffering on perceived competence, $F(1,78) = 35.72$, $p < .001$, $\eta^2_{partial} = .314$, in which suffering caused by a psychological trauma led to lower competence than suffering caused by a physical trauma ($M_{PsyT} = 4.20$, $SE_{PsyT} = 0.23$; $M_{PhyT} = 4.19$, $SE_{PhysT} = 0.20$). We found no main effect of treatment, $F(1,78) = .22$, $p = .638$, $\eta^2_{partial} = .003$ ($M_{Treat} = 4.60$, $SE_{Treat} = 0.28$; $M_{NoTreat} = 4.79$, $SE_{NoTreat} = 0.28$); and no interaction effect between causal cause and treatment, $F(1,78) = .28$, $p = .598$, $\eta^2_{partial} = .004$. See Table 5 for means.

A McNemar test shows that participants were more likely to accept euthanasia when suffering was caused by a physical trauma (47.5%, $p < .001$) then when caused by a psychological trauma (13.8%). An independent samples t-test showed the proportion of decisions accepting euthanasia was lower for the treatment condition ($M = .23$ $SE = 0.05$) than for the and no-treatment condition ($M = .39$, $SE = 0.06$, $t(78) = 2.17$ $p = .033$, 95% [0.14, 0.31]). A chi-square test determined that explaining unbearable suffering with a psychological trauma led to similar proportion of euthanasia acceptance in the treatment cause condition (7,5%, $p = .105$) and in the no-treatment condition (20%). When suffering was caused by a physical trauma, the proportion of euthanasia acceptance was marginally lower for the treatment cause condition (37,5%, $p = .073$) than for the no-treatment condition (57,5 %).

	Treatment		No treatment		Total		Total	
	PsyT	PhyT	PsyT	PhyT	Treat	No-Treat	PsyT	PhyT
	Mean (SE)	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*
State Depression	6.55	6.78	6.70	6.53	6.66	6.61	6.63	6.65
	(0.13)	*(0.11)*	*(0.13)*	*(0.11)*	*(0.09)*	*(0.09)*	*(0.09)*	*(0.08)*
Trait Depression	6.00	6.23	6.48	6.03	6.11	6.25	6.24	6.13
	(0.17)	*(0.18)*	*(0.17)*	*(0.18)*	*(0.17)*	*(0.17)*	*(0.12)*	*(0.12)*
Current Suffering	5.55	6.05	5.55	6.03	5.80	5.79	5.55	6.04
	(0.21)	*(0.17)*	*(0.21)*	*(0.17)*	*(0.17)*	*(0.17)*	*(0.16)*	*(0.13)*
Future Suffering	4.30	5.35	4.75	5.73	4.83	5.24	4.53	5.54
	(0.23)	*(0.21)*	*(0.23)*	*(0.21)*	*(0.22)*	*(0.19)*	*(0.17)*	*(0.15)*
Moral Acceptance	2.60	4.00	3.15	4.23	3.30	3.69	2.88	4.11
	(0.32)	*(0.34)*	*(0.32)*	*(0.34)*	*(0.33)*	*(0.33)*	*(0.23)*	*(0.24)*
Competence	4.15	5.05	4.25	5.33	4.60	4.79	4.20	5.19
	(0.32)	*(0.29)*	*(0.32)*	*(0.28)*	*(0.28)*	*(0.28)*	*(0.23)*	*(0.20)*

Table 5. Ratings of state depression, trait depression, current suffering, future suffering, competence and moral acceptance, in the cause of suffering conditions, psychological trauma and physical trauma, for the condition of trauma treatment and trauma no-treatment.

Study 3 replicated the pattern of results of the previous studies in which psychological trauma leads to lower competence and lower acceptance of euthanasia than physical trauma. The possibility of treating the trauma causing the suffering in 15 years did not reduce the discrepancy in perceived competence and euthanasia acceptance between psychological and physical attributions. Moreover, knowing the trauma could be treated did not reduce the gap in the predictions of future suffering. These results suggest that stability/malleability of the cause may not be a sufficient condition to reduce the discrepancy between mental and physical illness regarding the perception of human suffering and acceptability of euthanasia requests. However, manipulating the stability of the cause of suffering may fail to impact perceptions regarding the stability and controllability of suffering, as the causal relation between treatment and suffering is indirect. Moreover, the beliefs and stigma associated to the success of psychotherapy and treatment of mental illness may explain the lack of adjustment of future suffering in the psychological trauma condition. That is, participants need to infer that treating the trauma will end up having an effect on the experience of suffering. Moreover, presenting a treatment

for a physical trauma and for a psychological trauma, suggest treatments of different natures, which may perpetuate the perceived differences in the type and level of suffering generated by these traumas, and consequently the discrepancy between suffering caused by psychological causes and by physical causes. Study 4 thus attempts to directly manipulate the stability and controllability of the experience of suffering.

Study 4

In study 3 we found that the possibility of treating the cause did not reduce the gap between physical and psychological attribution. Specifically, even if the trauma could be treated, future suffering was expected to be lower when it was caused by a psychological trauma than by a physical trauma, which results in lower acceptance of euthanasia requests for the psychological trauma condition.

While treating the cause of suffering should lead to lower expected future suffering, people still judge suffering caused by a physical trauma to be more unbearable than suffering caused by a psychological trauma. This may imply that the causal connection between treatment and the experience of unbearable suffering is not clear, that eliminating the trauma (the cause) may not impact necessarily beliefs about the malleability and controllability of the suffering. It is also likely that by postulating different treatments for psychological and physical traumas, participants neglected the psychological nature of the suffering in all conditions. That is, even though suffering is described the same way, participants may believe that different causes of suffering imply different natures and levels of suffering.

Thus, study 4 directly manipulates the existence of a treatment for the psychological suffering caused by the traumas, rather than manipulating the existence of a future treatment. This way study 4 makes clear that the treatment will have an effect on suffering, and that the suffering originating from either cause has the same psychological nature. This should increase perceived malleability and controllability of suffering.

We expect that in such case, suffering originated by a physical cause would be perceived the same way as suffering originated from a psychological cause. Treating future suffering should reduce acceptability of the euthanasia request particularly in cases of suffering caused by a physical trauma. In cases of psychological trauma, future suffering was already expected to be malleable and controllable, so presenting a treatment for the future suffering should exert little effect on the moral acceptability of euthanasia requests for psychological causes.

Participants

Eighty participants (36 female, 44 male) participants (M_{age} = 41,37 years, SD = 11,15), from USA, from mTurk platform completed this study in English, in exchange of a monetary compensation.

Procedure

Study 4 uses the same materials and design of study 3, with one exception. Instead of manipulating the stability of the cause, we manipulated the stability of the effect, by manipulating the treatment of the unbearable suffering. In the treatment condition, we explicitly stated that the person had high probability of treating her psychological suffering in 15 years, regardless of whether the suffering was attributed to a psychological or physical trauma.

Results and Discussion

For each variable (state depression, trait depression, current suffering, future suffering moral acceptability and competence) ratings were entered into a repeated measures ANOVA with Trauma Treatment (Treatment vs. No-Treatment) as between-participants variable and cause of suffering (psychological trauma vs. physical trauma) as independent within-participants variable.

We found no main effect of cause of suffering on the state depression, $F(1,78) = 1.56$, $p = .216$, $\eta^2_{partial} = .020$ ($M_{PsyT} = 6.53$, $SE_{PsyT} = 0.09$; $M_{PhyT} = 6.65$, $SE_{PhysT} = 0.09$); nor a main effect of treatment on state depression, $F(1,78) = .034$, $p = .853$, $\eta^2_{partial} = .000$ ($M_{Treat} = 6.60$, $SE_{Treat} = 0.10$; $M_{NoTreat} = 6.58$, $SE_{NoTreat} = 0.10$); and no interaction effect between cause of suffering and treatment, $F(1,78) = .062$, $p = .804$, $\eta^2_{partial} = .001$. For the trait depression, we found no main effect of cause of suffering, $F(1,78) = 1.80$, $p = .183$, $\eta^2_{partial} = .023$ ($M_{PsyT} = 6.19$, $SE_{PsyT} = 0.11$; $M_{PhyT} = 6.33$, $SE_{PhysT} = 0.11$); no main effect of treatment, $F(1,78) = .043$, $p = .835$, $\eta^2_{partial} = .001$($M_{Treat} = 6.28$, $SE_{Treat} = 0.13$; $M_{NoTreat} = 6.24$, $SE_{NoTreat} = 0.13$); and no interaction effect between cause of suffering and treatment, $F(1,78) = .02$, $p = .903$, $\eta^2_{partial} = .000$. See Table 6 for means.

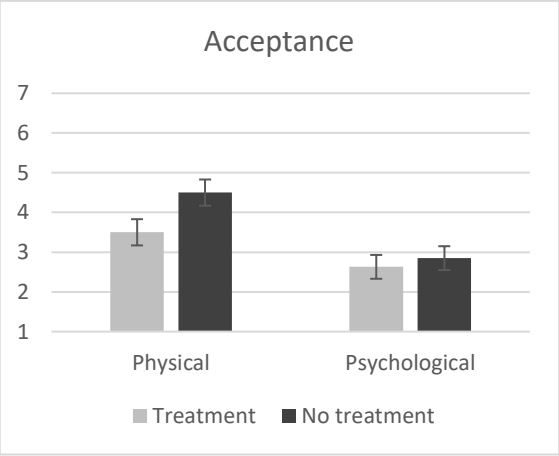
We found a main effect of cause of suffering on perceived current suffering, $F(1, 78) = 19.22$, $p < .001$, $\eta^2_{partial} = .198$, showing higher current suffering for the physical trauma condition than for the psychological trauma condition ($M_{PsyT} = 5.54$, $SE_{PsyT} = 0.16$; $M_{PhyT} = 5.59$, $SE_{PhysT} = 0.15$). We found no main effect of treatment, $F(1, 78) = .59$, $p = .445$, $\eta^2_{partial} = .008$ ($M_{Treat} = 5.69$, $SE_{Treat} = 0.16$; $M_{NoTreat} = 5.84$, $SE_{NoTreat} = 0.16$); and no interaction effect between cause of suffering and treatment $F(1, 78) = .06$, $p = .808$, $\eta^2_{partial} = .001$. See Table 6 for means.

We found a main effect of cause of suffering on perceived future suffering, $F(1, 78) = 50.63$, $p < .001$, $\eta^2_{partial} = .394$, showing lower future suffering for the psychological trauma condition than for the physical trauma condition ($M_{PsyT} = 4.56$, $SE_{PsyT} = 0.21$; $M_{PhyT} = 4.55$, $SE_{PhysT} = 0.20$). We also found a main effect of treatment, $F(1, 78) = 3.99$, $p = .049$, $\eta^2_{partial} = .049$, showing that ratings of future suffering

are higher in the No-treatment condition than in the treatment condition (M_{Treat} = 4.80, SE_{Treat} = 0.18; $M_{NoTreat}$ = 5.31, $SE_{NoTreat}$ = 0.18). This result suggests that our manipulation of suffering treatment was successful. We found no interaction effect between cause of suffering and treatment $F(1, 78) = 1.83$, $p = .181$, $\eta^2_{partial} = .023$. Despite the lack of a significant interaction effect, given our hypotheses, pairwise comparisons were performed. These showed that for the physical trauma condition, knowing that suffering would be treated in the future led to lower future suffering than no-treatment condition ($p = .017$); for the psychological trauma condition no differences were found between the treatment and no-treatment conditions ($p = .277$). See Table 6 for means.

When comparing judgments of moral acceptance of the request for euthanasia, we found a main effect of cause of suffering, in which requests for euthanasia were considered less morally acceptable when the unbearable suffering was caused by a psychological trauma then to a physical trauma, $F(1,78) = 60.84$, $p < .001$, $\eta^2_{partial} = .438$ (M_{PsyT} = 2.74, SE_{PsyT} = 0.21; M_{PhyT} = 4.00, SE_{PhysT} = 0.23). We found no main effect of treatment $F(1,78) = 2.17$, $p = .145$, $\eta^2_{partial} = .027$ (M_{Treat} = 3.06, SE_{Treat} = 0.30; $M_{NoTreat}$ = 3.68, $SE_{NoTreat}$ = 0.30); but we found an interaction effect between cause of suffering and treatment, $F(1,78) = 5.73$, $p = .019$, $\eta^2_{partial} = .068$. Pairwise comparisons showed that suffering treatment led to lower acceptance of euthanasia than no treatment of suffering when suffering was caused by a physical trauma ($p = .035$), but did not reduce euthanasia acceptance when suffering was caused by a psychological trauma ($p = .600$). See Table 6 for means.

We found a main effect of cause of suffering in perceived competence, $F(1,78) = 13.77$, $p < .001$, $\eta^2_{partial} = .150$, in which explaining the suffering with a psychological trauma led to lower judged competence than explaining the suffering with a physical trauma (M_{PsyT} = 4.31, SE_{PsyT} = 0.22; M_{PhyT} = 5.03, SE_{PhysT} = 0.20) . We also found a main effect of treatment, $F(1,78) = 6.22$, $p = .015$, $\eta^2_{partial} = .074$, indicating lower perceived competence when future treatment of suffering is possible (M_{Treat} = 4.20, SE_{Treat} = 0.27; $M_{NoTreat}$ = 5.14, $SE_{NoTreat}$ = 0.27). No interaction effect between cause of suffering and treatment of suffering was found, $F(1,78) = .11$, $p = .746$, $\eta^2_{partial} = .001$. See Table 6 for means.



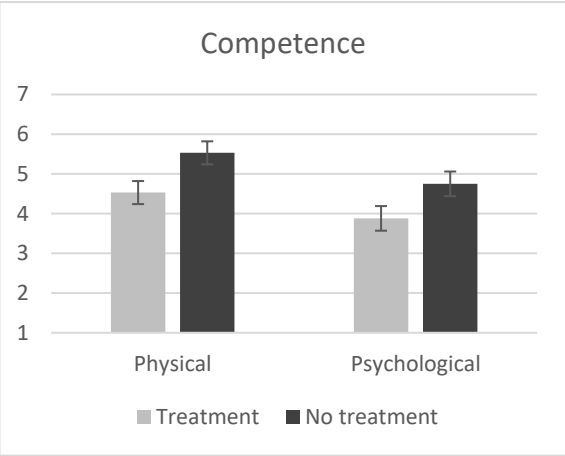


Figure 1. Ratings of competence and moral acceptance, in the cause of suffering conditions, psychological trauma and physical trauma, for the condition of suffering treatment and no-treatment.

A McNemar test shows that participants are less likely to accept euthanasia when suffering is caused by a psychological trauma (15.0%, $p < .001$) then when suffering is caused by a physical trauma (47.5%). An independent samples t-test showed that the proportion of decisions accepting euthanasia was marginally lower for the suffering treatment condition ($M = .24$ $SE = 0.06$) than for the and no-treatment condition ($M = .39$, $SE = 0.06$, $t(78) = 1.85$ $p = .068$, 95% [-0.01, 0.31]). A chi-square test determined that attributing unbearable suffering to a psychological trauma led to similar proportion of euthanasia acceptance in the treatment condition (12.5%, $p = .531$) and no-treatment condition (17.5%). However, when suffering was attributed to a physical trauma, the proportion of euthanasia acceptance was lower for the treatment condition (35%, $p = .025$) than for the no-treatment condition (60%).

	Treatment		No Treatment		Total		Total	
	PsyT	PhyT	PsyT	PhyT	Treat	No-Treat	PsyT	PhyT
	Mean (SE)	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*
Sate Depression	6.55 *(0.12)*	6.65 *(0.12)*	6.50 *(0.12)*	6.65 *(0.12)*	6.60 *(0.10)*	6.58 *(0.10)*	6.53 *(0.09)*	6.65 *(0.09)*
Trait Depression	6.20 *(0.15)*	6.35 *(0.15)*	6.18 *(0.15)*	6.30 *(0.15)*	6.28 *(0.13)*	6.24 *(0.13)*	6.19 *(0.11)*	6.33 *(0.11)*
Current Suffering	5.48 *(0.16)*	5.90 *(0.15)*	5.60 *(0.16)*	6.08 *(0.15)*	5.69 *(0.16)*	5.84 *(0.16)*	5.54 *(0.16)*	5.99 *(0.15)*
Future Suffering	4.40 *(0.21)*	5.20 *(0.20)*	4.73 *(0.21)*	5.90 *(0.20)*	4.80 *(0.18)*	5.31 *(0.18)*	4.56 *(0.21)*	5.55 *(0.20)*
Moral Acceptance	2.63 *(0.30)*	3.50 *(0.33)*	2.85 *(0.30)*	4.50 *(0.33)*	3.06 *(0.30)*	3.68 *(0.30)*	2.74 *(0.21)*	4.00 *(0.23)*
Competence	3.88 *(0.31)*	4.53 *(0.29)*	4.75 *(0.31)*	5.53 *(0.29)*	4.20 *(0.27)*	5.14 *(0.27)*	4.31 *(0.22)*	5.03 *(0.20)*

Table 6. Ratings of state depression, trait depression, current suffering, future suffering, competence and moral acceptance, in the cause of suffering conditions, psychological trauma and physical trauma, for the condition of suffering treatment and no-treatment.

In study 4 the manipulation of suffering stability was successful since results demonstrate predictions of lower suffering for the suffering treatment condition. Results of study 4 found that stability/controllability of the unbearable suffering (knowing the suffering could be treated in the future) led to lower competence judgments and to lower acceptance of euthanasia for cases of physical trauma, but not for cases of psychological trauma. This indicates that suffering caused by psychological trauma is believed to be mutable and controllable which may, in part, explain the observed differences in euthanasia acceptance between physical and psychological causes of suffering. These results suggest that the belief of suffering controllability increases the tendency to consider patient's euthanasia request as less moral and therefore to reject euthanasia. However, increasing perceived malleability and controllability of suffering caused by a physical trauma was not a sufficient condition to eliminate the gap between psychological and physical traumas, suggesting other mechanisms explain the different judgments in the psychological and physical attributions of suffering. Moreover, these results suggest that the belief of stability/controllability of the suffering, the effect, plays a more important role in moral judgments, than the perceived malleability of the trauma, the cause.

General Discussion

In the current research we were interested in understanding how psychological and physical representations of unbearable suffering affect acceptance of euthanasia in cases of end-of-life decisions. Specifically, we hypothesized that the belief that suffering attributed to a psychological account is more malleable and controllable than suffering attributed to a physical account, would lead to the perception of people describing unbearable suffering as less competent to make decisions about their lives, including end-of-life decisions, thus resulting in a mind-body gap showing lower acceptance of euthanasia for cases in which suffering has a psychological rather than physical representation. Simply put, we argue that the tendency to see mind/psychological attributes as more malleable and controllable than physical/body attributes explains part of the mechanism of stigma towards euthanasia in cases of mental illness. Because suffering is believed to diminish or cease in the future (and might even be exaggerated at the present moment), people with mental illness or psychological suffering requesting euthanasia are perceived to have impaired reasoning (lower competence) and to have no moral right to request for the end of their lives.

The present research tested the impact of the label/diagnosis of mental illness on the perceived competence of others to make decisions on euthanasia acceptance. We found that the diagnosis of Depression led to lower perceived competence and lower acceptance of euthanasia than when the patient was diagnosed with a physical illness (Study 1A,1B and 1C). We further showed that the mind-body gap in euthanasia acceptance is also present in individualistic cultures that hold more positive

attitudes towards mental health than collectivistic cultures (Studies 1B and 3C). Increasing social proximity towards the patient failed to eliminate the mind-body gap, in that it did not increase the perceived competence of the target, nor acceptance of euthanasia of a patient with mental illness, in comparison to a patient with a diagnosis of physical illness (Study 1C).

Importantly, the present research advanced the understanding of the tendency to reject euthanasia in cases of mental illness. We found that the discrepancy between body and mind is better explained by the causal attribution of the unbearable suffering than by the diagnosis of mental illness associated to the suffering. In this research, we found that the psychological (vs. physical) trauma causing the suffering led to lower perceived competence and lower acceptance of euthanasia (Study 2A), that manipulating the psychological or physical cause of suffering explains the mind-body bias beyond the associated mental illness diagnosis (Studies 2B and 2C). Importantly, we also found evidence that attributing suffering to a psychological trauma led to the prediction of lower suffering in the future than attributing suffering to a physical trauma (Studies 2A, 2B and 2C), which seems to be a key variable to explaining the lower euthanasia acceptance for psychological attributions of suffering

Finally, we directly tested the role of perceived stability and controllability of suffering in euthanasia acceptance (Studies 3 and 4). Manipulating the stability of the cause of suffering (the trauma causing the unbearable suffering), by adding the information that the trauma could be treated in the future (in 15 years) did not reduce the gap in perceived competence, perceived future suffering and euthanasia acceptance between psychological and physical attribution conditions (Study 3). However, when we directly manipulated the stability and controllability over the experienced suffering, we showed that the possibility of treating the experience of suffering led to lower perceived competence and lower acceptance of euthanasia for cases of unbearable suffering caused by a physical trauma (Study 4). This suggests that the belief that unbearable suffering can decrease in the future can lead to a perception that patients are less competent to decide about the end of their life, and consequently, to lower acceptance of euthanasia. Even though the possibility of future treatment of unbearable suffering led to lower predictions of future suffering (Study 4), we did not eliminate the effect of causal attribution in euthanasia acceptance decisions.

Together these findings show a mind-body gap in euthanasia judgments whereby attributing suffering to a psychological cause rather than to a physical cause leads to expectations of less future suffering, perceptions of lower competence and to less approval of the euthanasia. We further show that this discrepancy seems to depend on the perceived malleability and controllability of the experienced suffering. Psychological causes of suffering are perceived to be mutable and controllable, resulting in lower perceived competence of individuals requesting euthanasia for suffering caused by a psychological cause and to lower acceptance of euthanasia requests for such cases.

Mind-body gap contribute to explain mental illnessstigma

While stigmatizing beliefs about mental illness diagnoses seem to reflect the observed mind-body gap, the present findings suggest this discrepancy depends more on how people represent psychological phenomena per se than on stigmatizing labels of mental illness. The present findings, in which individuals suffering resulting from a psychological cause were judged less competent to decide about their own life than individuals suffering from a physical cause, are congruent with the stigma literature (e.g., Corrigan & Watson, 2002). Nonetheless, when suffering was mutable (Study 4), perceived competence was reduced for individuals with psychological unbearable suffering as a result of a physical trauma. This finding suggests that perceived competence may be inferred from beliefs regarding the malleability of and controllability over the suffering. The belief that psychological states can be changed and are under one's control, may lead to the inference that if the patients do not change their condition, that is because they are not competent enough to act that way. Therefore, low competence inferences for psychological conditions are unlikely derived from stigmatized representations of mental illness.

Moreover, while negative attitudes towards mental illness are reduced for individualistic cultures and with increased social proximity, the observed mind-body gap in euthanasia acceptance was not eliminated for either individualistic cultures (studies 1B,2C, 3 and 4) or with high social proximity towards the patient (Study 1C). Although these studies can be argued to have incomplete designs, masking a potential reduction in the mind-body bias for such conditions; they do not eliminate the effect and show a mind-body bias with the same effect size of the remaining studies.

Our results were also independent of stigmatized psychological disorder diagnosis labels, rather reflecting beliefs about the psychological or physical causes of suffering. Attributions of suffering to psychological causes seem to imply a perception of low stability of suffering, which is congruent with previous research showing that psychological phenomena are perceived to be less stable than biological ones (e.g. Dar-Nimrod & Heine, 2011; Haslam, Bastian, & Bissett, 2004; Goldstein & Rosselli, 2003; Lebowitz et al., 2013). The observed mind-body gap in euthanasia acceptance judgments does not seem to result from mental illness stigma but from cognitive representations of psychological phenomena. We argue that instead of being a product of stigma, the beliefs associated to the cause of suffering contribute to the social stigma associated mental illness.

Competence for making life decisions

A legal criterion for euthanasia is whether the person requesting euthanasia is competent enough to decide about their life. Our findings robustly show that when suffering is attributed to a psychological

trauma people infer lower competence to decide about their own life than conditions where suffering is attributed to a physical trauma. Results from study 4 further suggest that perceived competence depends on the perceived stability of suffering. If psychological states can be changed and are under one's control, then in the condition of psychological trauma, people may perceive that suffering is caused by a failure in coping with a certain life event, providing a direct evidence of low competence.

If the cause of suffering is a physical trauma the inference of lack of competence is less likely because consequences of a physical trauma are likely perceived to be more stable and less controllable. Consequently, the experience of suffering will not depend on the individual's competence to cope with their suffering. Study 4 subverts this reasoning when suffering caused by a physical trauma is made mutable. In that condition, participants may infer that individuals could change their condition but are failing to cope with their suffering. They are thus perceived to have lower competence to deal with life decisions, which would explain why patients with quadriplegia are resorting to euthanasia. Future research could further test these assumptions by comparing psychological and physical conditions that result directly from "incompetence" to deal with life events, for instance, physical illness related with self-regulation, such as obesity (Crandall, 1994).

Stability of suffering

Perceptions of suffering stability assume great importance in the present findings, as the possibility of treating future suffering reduced the mind-body gap in euthanasia acceptance judgments, suggesting that assumptions that psychological is unstable lead to low euthanasia approval. Both studies 3 and 4 were designed to increase the perceived malleability of patients' suffering. Yet only study 4 showed a reliable effect of the malleability and a reduction in the differentiation between a physical and psychological trauma. We argued that study 3 failed to reduce the mind-body gap because this study manipulated the stability of the cause of suffering by presenting a treatment for the trauma, rather on focusing on the suffering, suggesting different treatments for the physical and psychological conditions, as these conditions present different traumas with necessarily different treatments. Additionally, by manipulating the stability of the cause of suffering, study 3 is not directly manipulating the stability of the experience of suffering. In study 4 by introducing a treatment of the psychological suffering generated by the trauma, we propose the same treatment for the same suffering, rendering the cause of suffering a less relevant variable to predict how future suffering will unfold. Moreover, in study 4 the causal link between treatment and suffering is direct. Indeed, while study 3 proposes to manipulate the stability of the cause of suffering, the trauma, study 4 proposes to manipulate the stability of the effect, of the suffering itself. The different patterns of results obtained in studies 3 and 4 may be explained by the complexity of causal reasoning associated to behavioral causal structures

(see Waldmann, 2017; Waldmann et al., 2006), since focusing on the presence or absence of an outcome is less complex than making predictions about the effect (the suffering itself) by changing the presence or absence of the cause (the trauma causing the suffering). Thus, it could have been easier for participants to infer higher malleability of the suffering when the treatment manipulation tackled the effect, the suffering itself, than when the treatment tackled the cause of that suffering, the psychological or physical traumas.

It is also noteworthy that studies 3 and 4 attempt to increase the perceived malleability of suffering. While this manipulation had an effect on suffering caused by a physical cause (study 4) it did not impact suffering caused by a psychological cause. Our understanding of this result is that, because psychological disorders and psychosocial causes of disorders are perceived to have high mutability (e.g., Dar-Nimrod & Heine, 2011; Goldstein & Rosselli, 2003; Lebowitz et al., 2013), manipulations designed to increase the malleability of such conditions are unlikely to produce any significant effect. Although the present studies' instructions made it clear that the suffering condition was stable, we did not have a condition where the stability of suffering was reassured or made particularly clear. That is, we did not have a condition that decreased the perceived malleability and controllability of suffering compared to a control condition. This would be especially valuable, although challenging, condition to develop. Nonetheless, if effective, we would expect that such a manipulation would impact judgments about individuals whose suffering had a psychological cause, thus increasing the acceptability of the euthanasia request for these cases.

It is important to note, however, that even though the mind-body bias is mitigated when suffering malleability increases for the physical attribution condition, the bias is not eliminated. This suggests that other variables beyond suffering malleability, such perceived competence, or even other attributes of stigma, play a role in the mind-body bias in euthanasia acceptance judgments.

Conclusion

The present studies show a systematic bias towards suffering caused by psychological causes in euthanasia acceptance decisions. It is important to emphasize that our research and the observed discrepancy between body and mind does not preclude personal moral positions regarding euthanasia, our point is that similar cases of unbearable suffering are treated differently as function of whether suffering is attributed to a psychological or to a physical trauma. Such biased judgment seems to be grounded in the (also biased) perception that suffering caused by a psychological trauma is more likely to be reduced in the future than suffering caused by a physical trauma.

To conclude, regardless of whether one is in favor or against euthanasia, the perceived unbearable suffering and people's inferred competence and self-determination seem to depend on the nature of the cause of suffering.

Footnotes

[1] To further explore our data we looked for potential order effects in all studies of this chapter. Controlling for order effects did not change the effects of the independent variables on the dependent variables. Order effects were not consistent nor conclusive of any relevant finding. See the analysis including order of presentation for all the studies of this chapter in the Appendix A of this dissertation.

Chapter 6 – Discussion and Conclusion

Summary of empirical chapters

Understanding the underlying cognitive processes of clinical judgments is critical to improving clinical care and focusing future clinical research. The present dissertation brings the insights from decision science to the clinical psychology realm to achieve the overarching goal of understanding clinical intuitions about individuals expressing psychological suffering and symptoms of mental illness. In this research we explored the confirmatory tendency underlying the generation and testing of psychological disorder diagnosis, the adjustment of trait inferences and personality impressions, and the competence judgements and the predictions of future suffering of people expressing unbearable suffering. Ultimately, this research is aimed at contributing to the discussion of what could be implications of the confirmatory tendencies underlying clinical judgments for the practice and training of clinical psychology.

In chapter one, we presented an overview of the present research; in chapter two, we presented a conceptual model that served as the base of the present research. These theoretical chapters were followed by three empirical chapters, in which we presented the test of the hypotheses in behavioral studies using an experimental paradigm. In chapter three, we argued that manipulating task decomposability and inducing global vs. local processing provide different methods of hypothesis testing (Hammond et al., 1987, Hogarth, 2001). Grounded in dualist models of reasoning (e.g., Evans & Stanovich 2013; Sloman, 1996; Smith & Collins, 2009; Tversky & Kahneman, 1974;) and construal level theory (e.g., Trope & Liberman, 2000) the first empirical chapter of this dissertation tests the proposed conceptual model and suggests that global processing, as it occurs in a psychotherapy session, prompts the tendency to confirm a diagnosis, while decomposing information allows disconfirmatory processing and the test of alternative diagnosis.

In chapter four, we proposed and tested the confound between personality and mental illness. Although trait inferences are adjusted when a contextual cause is salient (e.g., Gilbert, 2002), in this line of research we propose that the trait inferred is not adjusted to the same extent for accounts of physical impairment and accounts of mental illness, unless mental illness is believed to be likely to cease in the future. This research exposed a tendency to a lack of trait inference adjustment for contextual psychological attributions, however it was not able to fully explain the nature of the overlap between personality and psychological disorder symptoms and raises the need to further fundamental research to study the mechanisms underlying correspondence bias and dispositional attributions in the case of psychological disorders.

In chapter five, we argued that the causal beliefs associated to the cognitive bias between body and mind (e.g., Haslam & Kvaale, 2015) may explain the discrepancy observed in judgments of other people describing unbearable suffering, specifically, judgments of competence to make decisions, and

about the described suffering. We argue that psychological vs. physical causal attribution, rather than diagnosis of mental or physical illness, guides perceptions of perceived competence and conclusions regarding whether life-ending actions are appropriate, as well as other forms of mental illness stigma.

In the current chapter of my thesis, I will further review previous research in order to situate my research results in the wider literature; discuss the individual contribution of each empirical chapter and their combined contribution for the understanding of the mechanisms underlying clinical gut feelings (intuitions about psychological suffering and people with mental illness); discuss the consequences of the present findings for the area of clinical decision making and for training and practice of psychotherapy; and discuss the limitations research described in this thesis. I will end this thesis with a concluding chapter in which I suggest future research steps to continue improving our understanding of the clinical decision making processes.

Confirmatory tendencies in clinical judgments

This research thus suggests how, in a context in which it is hard to define a correct answer, it is most useful for clinical judgment research to focus on the processes through which judgments are made, the impact these judgments may have on subsequent therapist behaviors, and ultimately client outcomes.

Focused on increasing understanding of the underlying processes that occur when therapists cannot use effortful, deliberate, and analytical judgment methods, in three research lines, we explored how different characteristics of the context in which a clinical judgment is made affects judgment outcomes, such as diagnoses, personality impressions and predictions of future suffering.

In the present research, we a) illuminate the conditions that lead to the different judgment methods underlying clinical judgments and explore therapists' judgment tasks when it is hard to use analytical processing; b) explore how the perception of others' behaviors and symptoms may lead to confirmatory processing of dispositional inferences; and c) understand how mental illness stigma and causal attribution of psychological suffering influences dispositional attributions, moral judgments and attitudes about end of life decisions.

We explored how the context in which the majority of therapists' judgments occur favors the use of intuition, which favors confirmatory tendencies in information gathering and analyzing. Under suboptimal conditions (i.e., within clinical sessions), hypothesis generation and testing may not involve alternative hypotheses or may involve alternative hypotheses that are complementary to the primary hypothesis, maintaining the likelihood of falling victim to confirmation bias (e.g., Arkes, 1991; Trope & Liberman, 1996). Unfortunately, this confirmatory tendency may compromise therapists' ability to make optimal clinical judgments that address clients' needs, which could ultimately limit successful

therapeutic outcomes. We demonstrated that when the information presented leads to the generation of a main focal hypothesis or makes salient a cognitive schema, confirmatory strategies guide the clinical judgment, leading to the rejection or ignoring of reasonable alternative hypotheses. However, when the content of information does not allow categorization into one focal hypotheses, disconfirmatory tendencies seem to emerge.

Theoretical and practical implications of task decomposability in clinical judgments

Main limitations and further research

In chapter three, in order to understand the judgment methods that occur in the context of the psychotherapy session, we tested the tendency for confirmatory hypothesis testing in global versus local processing. We operationalized global processing as a judgment task in which information was presented without interruptions or the possibility to break information into smaller parts, and only one final, global evaluation is reported. We operationalized local processing as a judgment task in which information was presented in smaller parts and interim judgments were reported after each piece of information, with a final judgment regarding all information presented reported last. We found that global processing favors confirmatory hypothesis testing, while local processing favors testing alternative hypothesis. In fact, we found that global processing led to higher ratings of the focal hypothesis, compared to local processing of information, suggesting confirmation of the focal diagnosis. Local processing, on the contrary, reduced confirmatory tendencies towards the focal hypothesis and favored higher ratings of the alternative hypothesis (studies 1, 2, and 3, chapter three). Our results also suggested that information was analyzed sequentially in conditions of local processing (studies 2 and 3), whereas it was processed holistically in conditions of global processing (studies 3 and 4).

This research was based on the assumption that the observed confirmatory tendency consisted of the integration of the non-diagnostic information into the focal hypothesis, in which case behaviors such as “I put things in perspective” would be considered symptoms that confirm the diagnosis of depression. However, the proposed research does not directly test what underlying processes lead to a higher or lower tendency to confirm the hypotheses.

In cognitive psychology, the distinction between global and local processing arises from the hypothesis that people tend to first look at the gestalt rather than at the details of a structure (i.e., the global precedence hypothesis (Navon, 1977). In Navon’s (1977) classic study, participants were presented with large letters (global characters) that were made up of small letters (local characters)

and were asked what target letter was present on screen. The study results demonstrated a tendency for a global dominance effect (e.g., see Förster & Higgins, 2005; Macrae & Lewis, 2002), a predominance of the identification of the large (global) letter in comparison with the smaller (local) letters. This distinction between global and local processing proved to be of importance in cognitive, clinical, and social psychology (Fink et al., 1996; Förster & Higgins, 2005; Kühnen & Oyserman, 2002; Liberman, et al., 2007). To test the hypothesis that perceptual and conceptual processing are based on similar attentional mechanisms, Friedman and colleagues (2003) developed a paradigm to test if priming a gestalt perception of objects (priming a method of global processing of visual information) (e.g., city maps) would translate into activation of abstract concepts in memory, thus facilitating the generation of exemplars unrelated with a certain category. In an experiment, participants instructed to look at the entire gestalt of a city map (global processing condition) generated, in a an unrelated categorization task, more unusual exemplars than participants instructed to look at the details of the same city map (local processing condition) (categorization task requires participants to identify the most unusual exemplar) (see also Förster, Friedman, Özelsel, & Denzler, 2006). These results suggest that global processing facilitated a broader categorization process. These processes can also be explained by the Bless and Schwarz (2010) inclusion–exclusion model. This model states that when information is included in a category, assimilation occurs, whereas when information is excluded from a category, contrast occurs. Assimilation and contrast effects result from the comparison of a target information with a standard, that is usually provided by the context and/or task characteristics. Assimilation effects refer to judgments that reflect a positive relationship between the target information and the standard (including in a category); and contrast effects reflect a negative (inverse) relationship between the target and the standard (excluding from a category) (Bless & Schwarz, 2010).

Global versus local processing may be related not only to categorization processes (inclusion versus exclusion) but also to closely related processes, such as searching for similarities versus dissimilarities, processes based on the comparison of information. Research exploring the extension of procedural priming (global vs. local) showed that, after global priming, participants found more similarities than dissimilarities, but the opposite pattern occurred after local priming. Moreover, research tested the hypothesis that global versus local processing could trigger further processes highly relevant for the development of assimilation or contrast effects, such as similarity search, Förster and colleagues (2008). Research showed that inducing local processing through perceptual tasks produced assimilation in additional tasks whereas local processing produced contrast (Förster et al., 2008). This study replicated Friedman's (2003) finding that processing styles elicited in one task can carry over to other tasks and influence social judgments.

The absence of order effects in studies 2, 3, and 4 suggests that the global processing condition favored categorization of behaviors as depression symptoms and local processing condition prevented

this categorization process. Specifically, results of studies 3 and 4, in which two diagnoses were elicited, showed that global processing condition led to confirmatory processing regardless of the order of symptom presentation, when one diagnosis was stronger than the other (study 3); and that the tendency to confirm only one diagnosis was eliminated when the two elicited diagnoses were equally strong. This also suggests that global processing plays a crucial role in the categorization of information, and further suggests that holistic processing, looking at the bigger picture, favors confirmatory processing by favoring inclusion. On the other hand, local processing seems to favor exclusion, favoring a less confirmatory tendency. Moreover, these results show evidence that the global processing condition favored holistic non-sequential processing, while local processing induced sequential processing. Although the design of this research was not intended to disentangle inclusion/exclusion from searching for similarities/dissimilarities, our results are more congruent with a hypothesis of inclusion/exclusion.

Implications of global vs local processing for clinical practice

Our finding suggesting that global processing, compared to local processing, encourages confirmatory hypothesis testing, leads us to wonder what are the risks and benefits of this confirmatory tendency when processing is global and how should this be addressed in the context of training and practice of clinical psychology. We found that the order of presentation of information only matters in a context (task characteristic) in which it is possible to analyze information locally, step-by-step. In such circumstances, therapists may benefit from having control of the order in which information is shared by the client. For instance, in a structured session, therapists may benefit from asking central questions (questions that lead to the generation of a core hypothesis) in the beginning the session. One possible open question could be a mood check. In this task, therapists would have the rest of the session to use disconfirmatory questioning to test the initial focal hypothesis. This can be ideal for situations where uncertainty about the case is high and several alternative hypotheses are theoretically equally likely. Initial phases of psychotherapy are contexts in which uncertainty is high and disconfirmatory strategies could be most helpful to explore several plausible hypotheses. On the other hand, when no order effects occur, therapists could benefit from having in mind that their main hypothesis should be given equivalent weight regardless of whether it was elicited in the beginning or the end of the client's description. This may be especially useful for psychotherapy sessions in which the therapist's goal is exploring a single hypothesis by identifying complementary, and deliberately confirmatory sub-hypotheses. For example, in certain sessions, therapists may be focused on understanding in which contexts a specific behavior/symptom is more likely to occur. In these sessions, in which therapists are focused on identifying the mechanisms maintaining the behaviors/symptoms, clients are likely to

describe their behaviors and feelings accompanied by loads of information that can represent noise and be a distractor from the hypothesis being tested. In that case, favoring a confirmatory tendency may be beneficial to meet client's needs.

We also found that when the content of information is hard to integrate in one single hypothesis, there is no benefit to using a decomposable and structured clinical session. We argue that if it is hard to integrate all information into one category, the context/task characteristic itself may induce local processing of information, thus leading to disconfirmatory strategies. We find this result especially relevant for the psychotherapy session setting, since it can serve different therapeutic goals. On one hand, results of study 4 seem to suggest an apparently easy way to induce local processing of information and reduce confirmatory tendencies without having to interrupt clients to ask them to decompose the described feelings and behaviors. This would be possible using an interview format specifically designed to gather information highly diagnostic of two different categories. For example, this technique could be used in a triage session, in which the inquiry would be focused on collecting information about symptoms that are diagnostic of several distinct psychological disorders, such as symptoms of Depression and OCD (as in Study 4). In another example, in later phases of psychotherapy, in which the therapists assess the stability of clients' changes made during the psychotherapy, the session could be designed to intermittently search for maladaptive behaviors indicating unstable change, as well as protective behaviors indicating stable change. It is important to note, however, that the presence of two equally strong and mutually exclusive hypotheses, such as the presence of highly diagnostic symptoms for two distinct diagnoses, is likely a rare scenario (DSM-5, APA, 2013). Based on psychopathology manuals, co-morbidity is more likely to occur in diagnoses that share symptoms, meaning that symptoms of one diagnosis (the weaker one in the mind of the therapist) will likely be considered confirmatory information for the other diagnosis (the stronger one).

In sum, the tendency toward confirmatory processing because of global/holistic processing, which is common in therapeutic sessions, allows us to argue that therapists' judgments and the consequent process of testing their clinical hypotheses may lead to judgement outcomes that neglect relevant information and may, therefore, compromise therapy effectiveness. These judgments may be misleading and, indirectly and unconsciously, impact therapy implementation. However, in certain circumstances, confirmatory tendencies may lead to higher responsiveness from therapists, by focusing on one focal hypothesis, thus preventing the impact of noise information.

Implications of global vs local processing for clinical training

In the present research we manipulated task characteristics to induce global or local processing. Our research does not consider the role individual thinking preferences or default judgment mindsets in

information processing and how these individual characteristics may interact with contextual task characteristics. Nonetheless such preferences or defaults may result from an over-exposure to task characteristics that promote either a more global or a more local processing Previous research focused on perceptual processing style demonstrated that people have a default of global processing (Förster & Higgins, 2005; Macrae & Lewis, 2002; Navon, 1977; Kühnen & Oyserman, 2002; Lin, et al., 2008). However, performance on the hierarchical figures of Navon's task, is suggested to be a result of cultural experience that could prime, even permanently, people to analyze visual information globally or locally (Nisbett et al., 2001), which suggests that global versus local processing depend on socialization, and ultimately training. Accordingly, cultures with more collectivist tendencies are believed to make people more sensitive to the visual background and more likely to consider global aspects and increase use of global processing than people embedded in the predominantly individualistic cultures (Nisbett et al., 2001). A local processing default, vs. global, was also identified in people from the Himba group, who tend to make more narrow categories (Roberson, et al., 2005; Roberson et al., 2002) than Western cultures, suggesting a high focal attention, which favors a local processing. Davidoff and colleagues (2008) compared people from Himba population and people form Western population and demonstrated that Himba people show a tendency for local processing in the Navon task, but do not show this tendency in face recognition. This suggests that global and local processing can be learned and automatized for different tasks. However, research is still unclear whether cultural differences that prime global and local processing were explained by collectivism and individualism values and beliefs (e.g., Nisbett, 2001) or by visual ability and practice, for example, to distinguish different objects on neutral elements, such as for example, the herd animals.

Taken together, this evidence suggests that global or local processing may be an aspect of human cognition that depends on task demands, that may also explain core cultural defaults. In other words, this may indicate these processing styles may be learned in a way that becomes automatized (see Hogarth, 2001). Thus, we argue that the attentional focus and information search strategies of clinical judgments could also benefit from deliberately training each processing style. In fact, several therapy approaches invest in techniques that, perhaps unintentionally, may include global or local processing of information. For instance, some psychodynamic approaches emphasize the need for the therapist to form a global impression of the session and the client in the session; or specific techniques from approaches such as emotion focused therapy, which require global understanding of the emotional experience. On the other hand, cognitive behavioral therapy requires the decomposition of the session. For instance, when there is a formal definition of the agenda and decomposition of the session in parts at in the beginning of each session. This may be inducing, inadvertently, the automatization of local processing. Research should invest in understanding whether therapists in different

psychotherapy approaches have exposure and practice of different processing types and what is the specific impact of those processing types in psychotherapy outcomes.

Theoretical and practical implications for dispositional inferences in clinical judgments

Main limitations and further research

In chapter four of the present dissertation, we examined how people test (confirm or disconfirm) the implicit hypothesis that behaviors are primarily attributed to personality if the target person is diagnosed with a mental illness than when the alternative explanation of the behavior is a physical illness. Specifically, the studies compared the trait inference adjustment made for two contextual accounts, a psychological disorder and a physical impairment. The results of these studies demonstrated that both lay people and therapists tend to neglect psychological disorder diagnoses as an alternative causal explanation for behavior, instead continuing to make trait inferences in the face of psychological disorder causal explanations. The trait inference adjustment was equivalent in both physical and psychological causal attribution conditions only when participants were told that the psychological disorder would be treated soon (study 6). Knowing that the psychological disorder could cease reduced the gap between psychological disorder and physical impairment, which gave a potential explanation for part of the mechanism underlying this confound: high instability or controllability of the psychological disorder. Nonetheless, results of chapter four leave unclear which (the stability or the underlying controllability of the disorder) lead to participants making a lower attribution of behavior to personality.

Disentangling the mechanisms underlying correspondence bias seems thus important for reducing the tendency to make dispositional inferences when strong contextual alternatives are presented. Correcting dispositional inferences is an effortful, deliberate and controlled process that demands cognitive resources and motivation (e.g., Gilbert, Jones, & Pelham, 1987; Gilbert, Krull, & Pelham, 1988a; Gilbert, Pelham, & Krull, 1988b). Since spontaneous trait inferences are automatic and effortless processes (see Uleman, et al., 1996), we argue that when people are in demanding conditions, such as those of a psychotherapy session, they tend to make trait inferences and have few resources to make corrections to those inferences according to potential situational factors.

People's tendency to neglect context may consist of the lack awareness of a contextual factor, which may occur if a contextual cause has low salience (Gilbert & Malone, 1995; Arkin & Duval, 1975; Heider, 1958; McArthur & Post, 1977; Taylor & Fiske, 1975; for a review, see Taylor & Fiske, 1978). For instance, Jones (1990) emphasizes how psychological or social constrains, such as social roles, may be

invisible factors (Jones, 1990), which require learning or exposure before people are aware of the need to take them into account as causal explanations of behaviors, and thereby adjust their trait inference(s) (Jones & Nisbett, 1972; Storms, 1973). If training is a sufficient condition, we should expect therapists and mental health professionals would adjust their trait inferences when presented with a causal explanation of a psychological disorder, since they are aware that disorders are contextual conditions that explain people's behaviors. However, we found (study 2) that therapists exhibited the same pattern of results as did lay people, suggesting that it is not the lack of awareness or low salience that lead to high dispositional attributions when behaviors were attributed to a psychological disorder. Moreover, results of study 3, in which causal attribution and the possibility to correct the judgment were made salient, people continued to show higher adjustment for a physical impairment explanation that for a psychological disorder. Which reinforces the confound between dispositional attribution and psychological disorder.

Another explanation could be related to a strong anchoring effect of the initial attribution, which would be personality due to the spontaneous nature of trait inferences (e.g., Todorov & Uleman, 2002). We expected that presenting the causal attribution before the behavior (study 4) would anchor behaviors to that attribution and would consequently lead to the direct categorization of behaviors to the contextual cause. Assuming this anchoring to the causal attribution occurred, there would be no need to adjust the inference (Quattrone, 1982; see also Strack & Mussweiler, 1997), resulting in lower trait inferences for both the psychological disorder and physical impairment conditions. In fact, in Trope's model of dispositional inference, that describes two processing stages (as Gilbert's model, e.g., 2002; Trope, 1986; Trope & Gaunt, 1999; Trope & Liberman, 1993), lay theories and expectations about contextual influences on human behavior often bias the categorization of ambiguous behavior in an assimilative manner (e.g., Trope & Alfieri, 1997), i.e., according to the expectation or theory activated. For example, information about an anxiety-inducing situation may lead to a spontaneous categorization of ambiguous behavior as highly anxious, which in turn promotes correspondent inferences of dispositional anxiety (e.g., Snyder & Frankel, 1976). This a priori categorization assimilation of the behavior into the expectation activated, leading to limited or no trait inference adjustment (e.g., Gawronski, et al., 2002). This means that if the contextual cause is believed to be associated to a dispositional inference, then people use the contextual cause to maximize the trait inferred. This may be the case with a psychological disorder as the contextual causal attribution. If people have lay theories that correlate personality and psychological disorder, such as believing that certain personality traits increase the proclivity of a psychological disorder or believing that personality traits are symptoms and therefore are associated to the diagnosis (i.e., are diagnosis criteria), then it would be easy to explain that people make high trait inferences when the contextual attribution of psychological disorder precedes the behavior, as found in study 4.

Beliefs about personality and psychological disorder may also play a relevant role in the obtained results. On one hand, we note that this line of research is based on the assumption that both personality and psychological disorder are putative causes of the described behavior, with a complementary assumption that the observed lack of adjustment of the trait inference reflects neglect of the psychological disorder diagnosis as a contextual cause.

The tendency to make dispositional inferences from observed behaviors while underestimating situational influences, has been described as the fundamental attribution error (e.g., Ross, 1977; Ross & Nisbett, 1991). This explanation of the effect relies on people's causal theories about how situations impact human behaviors. Accordingly, when people make causal inferences, they tend to give more weight to personality (as a disposition to behave in a certain way) than to contextual factors. Simply put, according to this perspective, the bias results from the belief that the contextual cause has little or no impact on human behavior. If this is the case, adjustment would not be expected because behavior would be solely or primarily attributed to personality. Applying this explanation (fundamental attribution error) for the high trait inferences found in our research, we could argue that participants hold different causal theories for physical and psychosocial causes of behavior (developed through experience). This would include believing that psychological disorder is not a strong alternative explanation for behaviors and believing that a physical impairment is an account of behavior that overcomes attribution to personality.

Explaining others' behavior based on their personality because one believes that context has little impact on human behavior implies different cognitive processes than explaining behavior with personality because one cannot process sufficiently the impact of context on a certain behavior, despite believing that contextual factors may strongly influence people's behavior. The design of chapter four's studies did not allow us to test if participants failed to correct the trait inference or rather, that they held a causal belief in which a psychological disorder has little impact on human behavior. However, we argue that the hypothesis that participants do not hold the belief that a psychological disorder affects behavior is not plausible. This idea is supported by research on mental illness stigma which shows that lay people attribute impaired cognition and maladaptive behaviors to the stigmatizing condition, the psychological disorder (e.g., Corrigan, 2000).

A further explanation for our results may consist on the relation between causal theories of behavior and lay theories about personality, that is, how personality is stable or malleable. Although participants are likely aware of the role a psychological disorder has in behavior, a more complex causal theory may explain the robust pattern of results of chapter four. In study 5, our results showed that eliminating the physical impairment as a cause of the behavior led participants to increase the trait inference. However, eliminating the psychological disorder as the behavior cause did not lead participants to revise their judgment, neither increasing or decreasing the trait inference. This result

may suggest that people have lay theories that connect personality and psychological disorders in which both accounts contribute to high dispositional inferences. Moreover, results of study 6, that showed how people adjusted the trait inferred to the same extent for both psychological disorder conditions when the psychological disorder was supposed to cease in two months, suggest that participants were making the correspondence bias, relying on complex beliefs about behavior that included representations of how behavior would evolve in the future. Thus, our results contribute to the literature by suggesting that correspondence bias relies on beliefs about behavior and personality when contextual explanations are psychological disorders.

Implications of high trait inferences and correspondence bias for clinical practice

Psychotherapy is a context in which clients describe their behaviors, which may include descriptions of current symptoms, behaviors suggesting protective coping strategies, and experiences and episodes from the past. These descriptions are likely to automatically prompt therapists to make trait inferences. Simultaneously, therapists are focused on understanding the causes of clients' behaviors, which means they are explicitly engaged in making causal attributions of clients' behavior. Moreover, making a clinical impression about a client, especially in a context such as a psychotherapy session, is a very demanding task, which may decrease the likelihood of adjusting or correcting trait inferences according to known contextual variables. Simply put, we argue that psychotherapy is a scenario in which it is challenging for therapists to escape making automatic dispositional inferences about the client, which may sometimes be erroneous. However, the present research does not directly test if it is the cognitive load associated to a psychotherapy process that precludes the effortful adjustment of the trait inference. In fact, the lack of trait inference adjustment we found may be explained by therapists' theories and beliefs (lay or professional) about personality and psychological disorders.

In the context of psychotherapy, attributing clients' behavior to their personality implies putting adaptive and non-adaptive behavioral tendencies on the same spectrum, which may result in the generalized inference that personality may vary from totally adaptive to totally non-adaptive. Ultimately, this may result in the inference that some people are adapted and integrated and others are not (which may lead to prejudice). However, recent research in psychopathology defends the perspective that symptoms consist of maladaptive behaviors that result from exacerbated personality features (e.g., Kotov et al., 2010; Mahaffey, et al., 2016). In this model, making high trait inferences is correctly identifying behavioral symptoms, which means that high trait inferences are not bias. Thus, high trait inferences, or accentuated traits as referred by the authors, correspond to criteria of a psychological disorder diagnosis (see hierarchical taxonomy of psychopathology, HiTOP;, Kotov, et. al.,2017). The focus of the diagnosing criteria is not the mal-adaptive behavior considering the person's

context; instead it is the intensity (from low to high) of certain personality traits. According to this approach, in which psychological disorders are (more dispositional than contextual, we could expect stronger trait inferences in the presence of a psychological disorder diagnosis, or at least we should not expect trait inference adjustment when the hypothesis of a psychological disorder as a cause for the behavior is eliminated. However, our findings that psychological disorder diagnosis do not exacerbate trait attribution. Even if we consider that personality causes the disorder (as HiTOP suggests), and based on the assumption that personality is stable, we should not expect a trait reduction when the disorder is treated. Our results from study 6 show however trait inference adjustment when participants know that the disorder will be treated. This leads us to question the value and use of models such as HiTOP. On one hand, this dispositional attribution may be seen as advantageous from the therapeutic process. One could argue that attributing symptoms to clients, and not to the context, may increase clients' perception that they need to be active in their own therapeutic and changing process. In this sense, emphasizing the clients' role in the therapeutic process may contribute to clients' empowerment and engagement in their own change. This scenario would likely be true if clients had high self-esteem and high self-efficacy to change their behavior (and their personality). Research demonstrated that high self-esteem favors self-serving biases and encourages individuals to change their cognitions when the self is under threat (e.g. see Molden & Higgins, 2005; Kunda, 1990). Thus, if clients with high self-esteem are aware that their personality includes a maladaptive trait, then the client could feel the need and mobilize the resources to change that trait. However, this situation seems to be more plausible in the end of a psychotherapy process than in the initial sessions, when perceived vulnerability may be higher and self-esteem and self-efficacy may be low.

On the other hand, if knowing that a client's symptoms can be treated reduces the attribution to personality, than attributing symptoms to personality may lead to the inference that symptoms are more stable and chronic, which may prevent treatment. Research has robustly shown that dispositional attributions of mental illness tend to be negative and to lead to stigmatization, including social rejection (Feldman & Crandall, 2007), blaming and low empathy both from lay people and therapists (Lebowitz & Ahn, 2014; Lebowitz et al., 2015). Maladaptive behaviors being labeled as a part of personality has been shown to lead to self-stigma, consequently, dispositional attributions can lead to low help-seeking behaviors by the person with the stigmatizing condition (e.g., Corrigan, 2004). In sum, we argue that further research is needed to better understand the risks and benefits of making dispositional attributions of psychological disorder symptoms.

Implications of high trait inferences and correspondence bias for clinical training

It is important to note that personality traits represent knowledge about how people tend to behave.

As discussed by Nussbaum and colleagues (2003), characterizing others based on traits may be more relevant in a social context in which it is difficult to predict others' behaviors. For instance, believing that a person is brave involves the assumption that a person will behave in a brave manner across different situation and time, which is based on the causal assumption that the person behaves with bravery because the person is brave and can be characterized by that trait. This research, based in construal level theory, showed that when others are distant from the self, specific information is scarce and characterizing others based on traits increases confidence in predictions about them. On the other hand, for psychologically close persons, context may be the most relevant source of information to make predictions about other's behavior, thus reducing the utility of traits to understand and predict behavior (e.g., Fujita, et al., 2006; Nussbaum, et al., 2003). Research focused on testing the tendency to make dispositional inferences according to psychological distance, showed that greater distance (vs. lower distance) led to higher spontaneous trait inference, although the behavioral description was the same across condition. This effect was observed for distance in both space and time dimensions. More importantly, a mindset priming task in which participants were asked to include the presented object in a category (high level, abstract construal) or to name another exemplar of the presented object (low level, concrete construal), led to different tendencies to make trait inferences. Specifically, high construal level (abstract mindset) led to higher trait inferences and low construal level (concrete mindset) led to lower trait inferences (Rim, et al., 2009).

Accurately predicting others' behaviors is also relevant in a situation where behavioral change is needed and, hence, high certainty is required, such as the case of psychotherapy. This reinforces the need to make abstract characterizations of clients in psychotherapy, which may explain the tendency for dispositional attributions. Research exploring the role of abstract and concrete thinking, levels of construal, in individuals' feelings of uncertainty about the causes of events, demonstrated that participants who were led to process a negative event in a more abstract way felt less uncertain about the cause of the event than participants who processed the same negative event in a concrete manner (Namkoong & Henderson, 2014; Namkoong & Henderson, 2019). Interestingly, this research further demonstrated that abstract construal level led to a more simplistic understanding of an event, which in turn explained the low uncertainty.

Taken together, this evidence suggests that inducing a concrete, low construal mindset may allow therapists to focus in contextual variables and reduce their certainty about their causal attributions, ultimately favoring the adjustment of the trait inference and reducing the correspondence bias. However, these construal level manipulations seem hard to implement in a clinical session. It seems

unreasonable to ask a therapist to imagine that behaviors that the client did in a distant past were recent or to imagine the client is close to therapist personally. Nonetheless, certain therapies are more focused on the present than on the past, such as Cognitive and Behavioral Therapy (e.g., Beck, 2011), which may provide therapists with a mindset that prevents attributions of symptoms to personality. In the same regard, psychotherapies focused on childhood and past events may facilitate abstract understanding of the case and thus, higher trait inferences and less adjustment to the contextual causes may occur. At the same time, these approaches, by focusing on the past, may put behaviors in a specific and salient context, which may facilitate the trait inference adjustment. If the focus on context is, in fact, helpful to reduce erroneous trait inferences, then psychotherapy approaches focused on the contextual causes of symptoms, such as traumas and phobia triggers, are the approaches with higher potential for better adjustment to the context and less potentially biased dispositional inferences. Future research testing therapies and treatment protocols developed to treat disorders such as PTSD (Post Traumatic Stress Disorder) are Phobia Disorder could help to the answer the question about how we can reduce correspondence bias.

Theoretical and practical implications of causal beliefs in clinical judgments

Main limitations and further research

In chapter five, we examined the confirmatory tendency to represent unbearable suffering as malleable when it is explained by a psychological cause and the consequences of this for responses to a request to end one's life. In general, results of chapter five suggest that unbearable suffering meets less acceptance of euthanasia when it is explained by a psychological account than when it is explained by a physical account. This tendency was found to be associated with higher attribution of the psychological suffering to personality when suffering was explained by mental illness than when suffering was explained by physical illness. However, the dispositional inferences associated to the unbearable suffering disappeared when suffering was explained by the actual cause of the suffering (psychological and physical traumas), instead of being explained by the diagnosis (studies 2A, 2B, 2C). Taken together, these results suggest that dispositional attributions result from specific beliefs associated to each type of illness, (for instance, people with the depression has impaired reasoning) not from causal beliefs associated to the psychological vs. physical causes of suffering. In other words, our results suggest that the tendency to attribute suffering to personality depends on beliefs about the mental illness labels, which may reflect a generalized learning of a negative stereotype. Knowing

the specific mechanisms of each belief may optimize the programs focused on reducing mental illness stigma

We further argue that these results suggest the high dispositional attribution of suffering when it is labeled as originating from mental illness (Treatment Resistant Major Depression) resulted from a denial of the causal role of the contextual information. Research has shown that this can occur when perceivers regard the observed behavior as highly diagnostic of an individual characteristic or trait, irrespective of the presence or absence of situational/contextual factors (e.g., Reeder, 1993). Drawing on the causal reasoning notion of necessary and sufficient causes (e.g., McClure, 1998; McGill, 1998; Trope & Liberman, 1993), a behavior is treated as highly diagnostic when it is expected to occur for people possessing a corresponding disposition and is not expected to occur for people who do not have that disposition (see Reeder, 1993; Reeder & Brewer, 1979). Reeder (1993) argued that people usually check the diagnostic value of the observed behavior before they correct their dispositional inferences based on situational factors. If the diagnostic value of the observed behavior is low, perceivers are more likely to take into account situational causes and correct their dispositional inferences. However, if the diagnostic value of the observed behavior is high, perceivers may generally infer a corresponding disposition without considering whether there are situational causes that might warrant a correction to their dispositional inferences.

It is important to note that the assertation that a behavior is diagnostic of a certain condition or scenario is based on a comparison of that behavior with a focal hypothesis, a belief about a specific trait or about personality in general, versus a comparison with the alternative mutually exclusive hypotheses. Thus, if Depression diagnosis is believed to depend on an individual's personality, then psychological suffering may be highly diagnostic of the trait depressive. However, a psychological trauma that happened at a certain time and circumstance would not be associated to an individual's personality, thus, psychological suffering caused by a psychological trauma will not be diagnostic of a personality trait. We can thus argue that explaining the unbearable suffering with a causal event (circumscribed in time and space), instead of labeling it with a diagnosis label, favors the adjustment of the dispositional inference, even when the cause is a psychological event because the causal explanation reduces how diagnostic psychological suffering is of the trait depressive. This analysis taps into a potential mechanism by which stigmatizing dispositional inferences may occur. Diagnosis labels may increase the behaviors' diagnosticity to infer certain personality traits when compared to more local causal explanations. These results also have the potential to shed light on the questions discussed in chapter four, by demonstrating that a psychological disorder and personality are confounded when behaviors are associated with a mental illness diagnosis, a condition that is likely represented as a stable.

It is noteworthy to emphasize that attributing suffering to a psychological trauma led to predicting lower suffering in the future than attributing suffering to a physical trauma (Study 2B, 2C, and 3). Even though in study 4 the possibility of future treatment of the unbearable suffering led to lower predictions of future suffering for both psychological and physical accounts, we could not eliminate the effect of the causal attribution, in which in the psychological trauma condition, participants imagined lower suffering than in the physical trauma condition.

Results of chapter five are in accordance with research showing that biomedical explanations of behavior are associated with low blame ascribed to sufferers for their symptoms, however they are associated with high prognostic pessimism (e.g., Kvaale, et al., 2013). On the other hand, psychological explanations tend to increase blame and the perception that the suffering condition is controllable (e.g., Corrigan, et al., 2000). These differences may be explained by the underlying "essentialist" beliefs about behavior, in which people believe that individuals' brain cells or genes, as parts of the body, are immutable and psychological attributes are malleable (Dar-Nimrod & Heine, 2011; Haslam, 2011).

Literature investigating the effect of making attributions to biology has found that, in people with psychological disorders, such as Depression and Generalized Anxiety, attributing their symptoms to neural or genetic causes is associated with pessimistic predictions about the future treatment of their psychological illness (e.g., Dar-Nimrod, et al., 2013; Lebowitz, et al., 2013; Lebowitz, et al., 2014; Kemp, et al., 2014).

The differences in our results may be explained by general lay theories about human behavior and personality. These lay general beliefs of human behavior and environment may be so well learned and automatized for understanding others' behaviors that they impact the judgment outcome regardless of available cognitive resources (Molden et al., 2006). As discussed above, the process underlying person perception implies an initial automatic trait inference that can later be adjusted according to contextual variables. Specifically, people who believe that personality is fixed corrected their initial impressions of a behavior to account for personality trait information but not contextual information. On the other hand, people who believed that personality is malleable, corrected their initial impressions to account for contextual information, but not for personality information (Molden et al., 2006; see also Knowles, et al., 2001).

Implications of causal beliefs for clinical practice

Results of chapter five show a robust relation between competence and moral acceptance, in which attributing suffering to a psychological trauma robustly led to lower competence and lower moral acceptance of euthanasia, in comparison to attributing suffering to a physical trauma. Interestingly,

manipulating controllability of future suffering reduced the discrepancy between mental and physical illness, by reducing the acceptability of euthanasia in the physical trauma condition (study 4).

Based on the assumption that people assess the diagnostic value of a behavior before they make their contextual correction, it is reasonable to argue that people may assume that unbearable suffering caused by a psychological circumstance is highly diagnostic of incompetence to make decisions, since suffering caused by a psychological trauma can be seen as a result of the lack of competence to deal with a life event. This can also explain why the patient in the physical trauma condition is perceived as less competent when it is possible to end their suffering in the future.

We discussed the impact of perceived competence on end-of-life decisions but it is also important to discuss the impact of perceiving a client as competent or incompetent may have on a therapists' decisions for the treatment plan. Whether the client is perceived as high or low in competence may affect how therapists involve clients in either major therapeutic tasks such as the definition and assessment of the therapeutic goals and treatment plan, or in minor tasks, such as the definition of clients' homework. Further research should test the hypothesis that psychological suffering is perceived as evidence of psychological incompetence and assess its impact on treatment planning and prognostic predictions.

It is also relevant to discuss the implications of making predictions of future suffering for clinical practice. Literature has showed that biological explanations of psychological disorders tend to reduce blame and controllability but increase prognostic pessimism. On the other hand, psychological explanations increase blame and controllability but reduce the prognostic pessimism (for a review, see Lebowitz & Appelbaum, 2019). Considering the scenario of the end-of-life decisions, we may argue that framing the suffering as an effect of a physical cause – for instance, emphasizing the biological nature of the condition – will promote judgments of low controllability and higher immutability, which may favor euthanasia acceptance for people diagnosed with mental illness. This seems an easy solution to mitigate the stigma towards cases of euthanasia that do not identify physical illnesses and increase decisions aligned with the sufferer's request, as observed in chapter five, even though, such approach may cause doctors and therapists to work less hard to help someone find an alternative to euthanasia., For the psychotherapy context this may not be such a straightforward solution to reduce mental illness stigma. In the psychotherapy context, where believing that behavior and personality are mutable is desirable in order to achieve change and positive psychotherapy outcomes, emphasizing the biological nature of the condition will increase perceptions of mutability and hinder therapies' goals. Could the solution consist in putting the emphasis on the psychological causes of suffering? This framing would increase the belief of mutability and decrease the prognostic pessimism, essential variables for successful psychotherapy outcomes. It would also promote further psychotherapy and psychiatry research focused on understanding and promoting behavior change, which would be at risk with a

framing that induces beliefs of stability. However, increasing the salience of this framing of suffering as a result of psychological events might also elicit more dispositional attributions, which could be accompanied by blame (as discussed above) and lower perceived competence, as demonstrated in our results, stigmatizing responses. Moreover, it is important to note that the focus on the causal attribution of the suffering implies a focus on the past instead of focusing on the client's present needs. Thus, regardless of the causal attribution framing solution, people's capacities and current suffering experience are at risk of being neglected if the focus is on the dispositional attribution of behaviors which can be a consequence of stigma.

Our research on end-of-life decisions, contributes to the understanding of the mechanisms underlying acceptance of others' end-of-life decisions this should have important implications for psychotherapy processes that deal with loss and suicidal ideation. Additionally,the debate around unbearable suffering and euthanasia also comes associated with arguments that reflect the belief in destiny and in a deeper meaning for that unbearable experience. In these cases, the suffering is attributed to another type of phenomena, one that is abstract, that may represent a group or collective or a non-human entity. Regardless the scenario of end-of-life decision, the tendency to focus on the causes of behavior comes from the need to control our environment and to make accurate predictions about others and the world around us. This process of looking for the causes, either events that happened in the past or in atemporal abstract entities, is sometimes associated with the belief that "it had to happen". This belief comes associated with deterministic beliefs about the world, more specifically, fate. This consist on a belief in which forces outside of the individual's control play a role in determining an outcome, and it implies the idea that there was no other way that the outcome could have turned out (Young & Morris, 2004). On the other hand, beliefs about the mutability of past events involves counterfactual thinking (Mandel, et al., 2005; Roese, 1997). Counterfactual thinking consists of the capacity to generate alternative past scenarios that would lead to different outcomes (e.g., Roese, 1997). However, research in counterfactual thinking has shown that the alternative scenarios often consist of individual actions, in which the person could have performed differently to produce different outcomes (Girotto, Legrenzi, & Rizzo, 1991; Mandel & Lehman, 1996; Markman, et al., 1995). Thus, these specific counterfactual thoughts increase beliefs in personal control (McMullen, et al., 1995; Nasco & Marsh, 1999). How, and in which psychotherapy phases and circumstances, therapists promote fate beliefs and counterfactual thinking is a relevant question that needs further investigation.

Research has emphasized the motivational aspects of this belief, since people can take comfort from the belief that there was no alternative outcome, particularly those of a tragic nature, were "meant to be" (e.g., Greenberg, et al., 1997; Pyszczynski, et al., 2002). However, fate beliefs may occur through non-motivated errors of attribution (e.g., Gilbert, Brown, Pinel, & Wilson, 2000),. A study

focused on testing the impact of construal levels (abstract vs. concrete) on both fate belief and counterfactual judgments, manipulated the way participants responded to questions (Gilbert, et al., 2000). In the abstract condition, participants responded to the questions emphasizing abstract, superordinate ("why") features and in the concrete condition, participants responded to the questions emphasizing concrete, subordinate ("how") features. They found that framing real past events as more abstract (why?), compared to concrete (How?), made participants more likely to interpret those events in terms of fate. However, this construal level manipulation had no effect on counterfactual beliefs that past personal action could have produced a different outcome. These results also occurred when mindsets were manipulated using temporal distance. Thinking about distant past events led to higher fate beliefs than thinking about a recent past event but did not change the beliefs about personal counterfactuals nor luck beliefs (Burrus & Roese, 2006). This study is important to better understand how a focus on deterministic beliefs may change according to the task characteristics and mindset. In the studies of chapter five, participants were given short information about each case and were asked to make global judgments without having been given the opportunity to search for more information and analyze it analytically. In a real context, therapists and healthcare professionals usually lack the time and resources to search for more information about the case and analyze it part by part, which may induce fate beliefs and prevent the focus on personality and behavior mutability.Importantly, the fate belief is likely to favor feelings of acceptance of certain outcome, which may be an important aspect of a therapeutic process. For instance, in a psychotherapy process focused on accepting the rupture of a relationship rupture, a fate belief may facilitate the process towards the development of new life routines and new relationships. Moreover, in the scenario of end-of-life decision, this belief may imply stability in the causal structure and consequently favors the prediction that future outcomes will be similar to the observed one. Similarly, it seems likely that the acceptance of future suffering as inevitable, as a fate, may favor the moral acceptance of euthanasia even though people may be perceived as incompetent. Further research testing the interaction between perceived competence and fate belief in perceptions of psychological suffering would contribute clarifying in what extent the people's competence is needed to assess their suffering. Noteworthy, in a context where treatment or symptoms improvement are expected, believing in fate may also prevent the generation of alternative scenarios in which the person could have done things differently to overcome the unbearable suffering. In this sense, believing in fate may reduce the perceived controllability of a psychological representation of suffering. Further research should explore the problems and beneficial aspects of the fate belief in clinical judgments and, consequently, how it affects the course of psychotherapy.

Implications for clinical training

Lay theories about personality are seen as individual variables, dispositions that organize individual's knowledge and ways of thinking and that show consistency over time and across situations. However, the use of these beliefs may depend on the knowledge activated at a certain moment, as suggested by Dweck and colleagues et al., (1995) (see also (e.g., Anderson, 1995; Kruglanski, 1995). Thus, Poon and Koehler (2006) test the hypothesis that specific behavioral information may activate different personality beliefs, such as that personality is fixed versus malleable (e.g., Dweck, 2008). For example, information from different episodes, in which the person behaved differently may suggest that personality may have changed. In the opposite scenario, information about different episodes showing that the person that acted always in the same way may activate the belief that personality remained fixed in a certain trait regardless of the context (Poon & Koehler, 2006). Thus, it is reasonable to argue that people hold both beliefs. From their personal and interpersonal experiences, people obtain information that sustains the belief that personality is fixed and knowledge that supports the belief that personality is malleable.

Based on a knowledge-activation framework, lay theories about personality are induced based on accessible knowledge (Poon & Koehler, 2006). In the presence of certain cues or task characteristics, a personality belief can become activated (for example, personality is fixed), which is expected to influence the assimilation and integration of information that is consistent with the belief (e.g., Higgins, 1996). Therefore, the activation of different beliefs will consequently lead to different trait inferences. in other words, specific information about actions and behaviors may reduce or increase the tendency to make dispositional inferences, depending on the activated belief. In turn, the use of beliefs in judgments may be conceptualized as a confirmatory phenomenon, as observed for stereotypes (e.g., Sinclair & Kunda, 1999) or cultural theories (e.g., Hong, et al., 2000). It is noteworthy that the belief in the malleability of personality can be taught. When it is, people show increased motivation to learn and they perform better on challenging tasks. Moreover, research has shown that people can also learn personality theories from the kind of praise they receive (Mueller & Dweck, 1998), which has effects on people's performances. People who are taught to believe that personality is malleable showed improvements in several domains, such as challenge seeking, self-regulation, and resilience. Furthermore, changing self-theories appears to result in important real-world changes in how people function (.e.g., Aronson, et al., 2002; Blackwellet al., 2007). Following this evidence, knowledge on causal theories and personality beliefs should be explicitly integrated in clinical training. Education in psychology and training of junior therapists already includes topics related to the therapists' self-awareness of their motivations and values, and how those can interfere with clinical practice. However, research is scarce regarding the acknowledgement of therapists' awareness of their causal

theories and personality beliefs. Psychotherapy training would thus benefit from investing in modules dedicated to identifying clients' and therapists' own beliefs about how, and which, behaviors are believed to be attributed to personality and/or context, and which types of behavior are stable and/or mutable; and when and in which phase of the therapy to promote the use of different beliefs.

Although this training may play a central role on improving clinical judgments, its implementation may reveal several barriers. In the context of psychotherapy, therapists are focused of finding patterns of behavior that imply consistency and congruence in different circumstances and times. Moreover, according to standards of clinical psychology, such as the DSM-5 (APA, 2013), the presence of certain maladaptive behaviors (a set of symptoms) indicate a psychological disorder if those symptoms are consistent across time – for instance, symptoms have to be present for at least six months in the case of Depression; and across situations – for example, symptoms have to affect more than one domain of life (e.g., APA, 2013). Hence, even though therapists may be focused on identifying contextual variables and hold the belief that personality is malleable, this consistency seeking mindset promotes exposure to information that may activate the theory that personality is fixed, thus increasing the likelihood of making dispositional inferences about the client. Thus, these clinical judgments imply certain task characteristics that may prompt therapists to engage in a dispositional mindset, which may compromise therapy. To contradict this tendency of making dispositional attributions, therapists may counterbalance their inquiry about consistency with questions about behavioral variation. For instance, therapists might be well served by explicitly searching for episodes and circumstances or moments in time when the client behaved differently. This strategy would potentially not only increase the weight given to contextual factors but also provide divergent information that would lead therapists to engage in more disconfirmatory hypothesis testing.

Testing clinical bias in clinical judgments

Confirmatory processing is often associated with a biased and misleading judgment process and erroneous judgment outcomes (e.g., Kunda, 1990). However, the present research is based on the assumption that in a clinical setting there is not a final correct answer about whether confirmatory processing is positive or negative for clinical outcomes. Instead, it is the process underlying the achievement of good client outcomes that matters (Lilienfield & Basterfield, 2020). In light of this premise, the present research was designed to diverge from the traditional experimental paradigms in cognitive psychology that mostly test in which conditions people tend to fail or to give the correct answer in a certain task (see e.g., Gigerenzer, 2008). A methodological solution for this experimental paradigm (focused on the right vs wrong), consisted of developing experimental designs in which two similar outcomes would occur if we successfully manipulated the intended variable. Thus, to

understand the tendency to engage in confirmatory clinical judgments, the empirical studies described in this thesis (chapters three, four and five) were based on an experimental paradigm in which participants were presented with specific information to elicit a hypothesis or activate a schema, that would be followed by the presentation of different information that was supposed to influence the processing of the elicited hypotheses or activated schema. In this experimental paradigm, each type, or format, of subsequent information consisted of experimental conditions that would lead to different judgments about the person describing psychological suffering or symptoms of mental illness. Our goal with this experimental paradigm was to directly compare in which conditions people tend to use confirmatory processing of information or consider alternative hypothesis, thus leading to a less confirmatory hypothesis testing strategy. These hypotheses could be psychological disorder diagnosis, trait inferences, or causal beliefs about the malleability of suffering. In each of the three empirical chapters, our results would not have suggested bias if the results were the same across conditions. In chapter three, we hypothesized that confirmatory tendency would be observed in the discrepancy in diagnosis ratings in global and local processing conditions. In chapter four, we hypothesized that the tendency for more correspondence bias and lack of trait inference adjustment for psychological disorders would be observed in the trait inferences discrepancy in the contextual psychological disorder condition and contextual physical impairment condition. Lastly, in chapter five, we hypothesized that mind-body gap would be observed in the discrepancy of competence and acceptance ratings in the psychological and physical attribution conditions. These experimental designs derived from the goal to create a judgment setting that does not implicate a correct answer. On one hand, we consider this is a strength of the described research, since it does not rely on a conservative and prescriptive way to generate knowledge and empirical evidence that compares participants' answers with a theoretically correct answer. However, on the other hand, this experimental paradigm may also consist of a methodological weakness that may prevent us from arriving at strong final conclusions that dispense with the need for further research, since this paradigm is based on the assumption that the biased confirmatory processing does not occur when the effect between experimental conditions is null. Nonetheless, the present research advances knowledge in clinical decision making and may contribute to important insights about clinical practice and training.

General Conclusion

In this research we emphasized the need to better understand the cognitive processes underlying clinical intuitions in order to better understand therapist judgment and decision-making processes and optimize mental health care and bring new insights for future research. Understanding the clinical gut feelings – conceptualized in this research as clinical intuitions about others with psychological suffering

and mental illness symptoms – not only provides a better understanding of the mechanism of confirmatory processes when the task is suitable for the use of intuition, but also suggest conditions that determine its use and the reduction of possible biased clinical judgments. This research contributes to research in clinical psychology with empirical evidence to advance the area of clinical decision making and to bridge the gap between decision science and clinical psychology. Specifically, by exploring the confirmatory tendency underlying the generation and testing of psychological disorder diagnosis, the adjustment of trait inferences and personality impressions, and the competence judgements and the predictions of future suffering of people expressing unbearable suffering.

We demonstrated that manipulating task decomposability and inducing global vs. local processing provide different methods of hypothesis testing. We showed that although trait inferences were adjusted when a contextual cause was salient, the inference was not adjusted to the same extent for accounts of physical impairment and accounts of mental illness, unless participants believed the mental illness would soon cease. The lack of trait inference adjustment for contextual psychological attributions suggests the need to further study the mechanisms underlying correspondence bias and dispositional attributions, in order to reduce this effect, especially if this leads to a misleading perception of the person. We also showed a mind-body gap, in which attributing the suffering to a psychological illness led to lower perceived competence and euthanasia acceptance than attributing the suffering to a physical (body) and that it is the psychological vs. physical causal attribution, rather than diagnosis of mental or physical illness, that guided perceptions these judgements in the contexts of end-of-life decision making.

In the present research, we a) illuminated the conditions that lead to the different judgment methods underlying clinical judgments and explore therapists' judgment tasks when it is hard to use analytical processing; b) explored how the perception of others' behaviors and symptoms may lead to confirmatory processing of dispositional inferences; and c) understood how mental illness stigma and causal attribution of psychological suffering influences dispositional attributions, moral judgments and attitudes about end of life decisions.

Chapter 7 – Future Directions

Metacognitions of clinical judgments

Intuitive clinical judgments, fluency and feelings of rightness

In the present dissertation, we argue that confirmatory tendencies associated to clinical gut feelings (clinical intuitions) occur when individuals cannot engage in a disconfirmatory hypothesis testing process, whether because it is hard to decompose the flux of information, because there is a confound between personality and psychological disorder and the latter is not perceived as a contextual account of behavior, or because the causal beliefs associated to mental illness guide subsequent judgments about the malleability of suffering. We argue that this confirmatory tendency can lead to bias and reduce therapists' need to test their hypotheses. This is especially relevant since spontaneous and intuitive judgments are associated to a feeling that the judgment made may be true and should be trusted or preferred (Risen & Gilovich, 2007, 2008., Koriat, 2007; Thompson, 2009, 2010), which may reinforce the tendency toward confirmatory processing in favor of the focal hypothesis. This metacognition may explain the confirmatory tendency associated to clinical intuitions.

The ease with which intuitive judgments are made may elicit a metacognitive reflection of confidence in the initial judgment, described in the literature as a subjective *feeling of rightness* (FOR; Thompson, et al., 2011). Simply put, an intuitive process has two types of outcomes, the judgment outcome and the associated metacognition (See e.g., Thompson et al., 2013). Regardless the format (perceptual, linguistic, semantic, among others), processing fluency has been shown to impact subsequent judgement domains (see Alter & Openheimer, 2009 for a review; Koriat, 2007; Topolinski & Reber, 2010 for recent reviews). Especially relevant for the clinical judgment is that the ease associated to the judgment process leads to the inference that the judgment is correct (Hertwig, 2008). Moreover, when the confidence associated to the intuitive process is high, the probability and extent of engagement in deliberate analytical processes is reduced relative to when the feelings of rightness are weak (Thompson, 2011). In other words, therapists likely feel confident in their judgments when using intuitive reasoning, and therefore perceive their judgment outcomes as valid (Thompson, 2009, 2010). This sense of validity may subsequently result in generating and testing fewer hypotheses and more confirmatory information seeking. However, it is important to note that the relation between judgment fluency and elicited metacognitive confidence is an inferential process, which means that the therapist infers that the judgment was correct because it was easy to arrive at. Consequently, this inference is expected to depend on the context associated to the judgment, which allows the therapist to attribute the ease of making the judgment to their own cognitive abilities or to some feature of the context or task. In other words, the metacognition that arises from making a judgment that felt easy

or difficult depends on how the person interprets that ease/difficulty. For example, in a study testing the impact of visual disfluency, when participants knew that the text was difficult to read because of a low ink cartridge, they discounted the effect of disfluency and did not infer the text was difficult to understand, as participants did when no causal information was provided (Openheimer, 2004). Thus, processing fluency only contributed to high confidence in the judgment if there was not a compelling alternative explanation for the positive affect (e.g., Schwarz, 2004).

Based on results obtained in chapter three, the tendency to confirm the hypothesis in the global condition and to be less confirmatory in the local condition could be explained by different levels of feelings of rightness (metacognitions) associated to each task characteristic condition (local vs. global processing). In the local processing condition, asking the same judgment several times may activate a metacognition of low confidence and low certainty about the judgments made, thus leading participants to engage in more deliberate reasoning and in less confirmatory hypothesis testing than asking one global judgment. The single and global intuitive judgment task of the global condition, a less effortful process, may elicit a feeling of high confidence and rightness about the judgment made, thus favoring more confirmatory processing.

Moreover, as discussed in this dissertation, research focused on understanding the correspondence bias has demonstrated that the adjustment of dispositional inferences, to take into account a contextual explanation, is an effortful process that demands cognitive resources (Gilbert & Malone, 1995, Gilbert, 2002, Gaunt & Trope, 1999). Thus, we can infer that the trait inferences participants made when the contextual explanation was a psychological disorder reflect a simpler and easier process than do the trait inferences made when the contextual explanation was a physical impairment, which involved an adjustment in light of the contextual explanation. Therefore, we hypothesize that the observed high trait inferences when the contextual explanation was a psychological disorder may reflect a fluent process, which may be associated with high metacognitive confidence. It is noteworthy that the lack of correction of the dispositional inference when participants were given the opportunity to correct their judgments suggests that participants were confident of their judgment. We propose, that further research should test that the metacognitive high confidence arising from these dispositional judgments may be reinforcing the individual's causal beliefs about behavior attribution, thus reinforcing the observed confound of personality and psychological disorder, as a mechanism of the observed effect.

Reducing Hindsight Bias

We often have the feeling "I knew it all along" after learning the outcome of a certain event. This feeling, known in the literature as the *Hindsight bias,* is defined as the difference between foresight

and hindsight estimates (e.g., Fischhoff, 1975). In other words, this bias occurs when people believe they knew the outcome of an event before the outcome occurred, even though they did not. This effect, which has been shown in several domains (for a review see Roese & Vohs, 2012), is extremely relevant for the context of clinical decision making. Since hindsight bias occurs after feedback is provided, it may represent a barrier to the process of learning from experience. The belief that a certain outcome was already predicted or expected, when it was not, may erroneously inform people that their reasoning process led to an accurate outcome, when it did not.

It is noteworthy that in psychotherapy, understanding a case consists of identifying clients' symptoms and finding causal explanations for those. In this sense, therapist's hindsight bias may reflect their motivation to give meaning to a certain event or symptom (see e.g., Nestler et al., 2010; Kruglanski, 1989; Lombrozo, 2006; Wilson & Gilbert, 2008; Einhorn & Hogarth, 1986; Lombrozo & Carey, 2006; Roese & Morris, 1999). Interestingly, research has shown that knowing the feedback about an outcome after it occurred led participants to attribute meaning to the event including the sense that the obtained outcome was inevitable (Roese & Vohs, 2012). In fact, the more a story or narrative is coherent and easy to explain (easy to understand the causal structure), the greater the hindsight bias (Blank & Nestler, 2007; Hawkins & Hastie, 1990; Wilson & Gilbert, 2008). Research has shown that straightforward causal explanations evoke greater hindsight bias than situations that are more ambiguous (Jennings, et al., 1998; Trabasso & Bartolone, 2003; Trabasso & van den Broek, 1985; Wasserman, et al., 1991; Yopchik & Kim, 2012). It is noteworthy that it is not the simplicity of the causal structure that guides the hindsight bias, but the capacity to find an explanation, since unexpected outcomes may increase hindsight bias, but only when people find a coherent explanation for them (Ash, 2009; Blank & Nestler, 2007; Calvillo & Gomes, 2011; Nestler, et al. 2008a, 2008b; Nestler & Egloff, 2009; Pezzo, 2003, 2011; Roese & Olson, 1996; Roese & Sherman, 2007; Schkade & Kilbourne, 1991; Sharpe & Adair, 1993). The subjective feeling associated to the explanatory strength and coherence leads to the inevitability level of hindsight bias (i.e., the belief in the objective predictability of past outcomes).

Moreover, if the confirmatory tendency of recalling information leads to revision of one's "knowledge" based on the observed outcome, perhaps more relevant for therapists' judgments and decisions about case conceptualization and treatment planning is the dimension of inevitability. Roese and Vohs (2012) discuss how the feeling of inevitability relies on beliefs about how the world functions, for example, the belief that a past event was predetermined and that an outcome had to occur (e.g., "Under the given circumstances, no different outcome was possible"; see Nestler et al., 2010). Thus, the perceived inevitability implies that, along with the confirmatory processes of information search, causal beliefs contribute to give meaning to an observed outcome. Nestler and colleagues (e.g., 2010) have discussed the role of causal beliefs for the perceived inevitability in the hindsight bias referring

to the belief in determinism. Researchers have not been clear, however, about in which circumstances and how deterministic beliefs affect other person perception judgments, and how it may contribute to the hindsight bias. Moreover, it is important to note that different deterministic causal beliefs lead to different outcomes and inferences. For instance, when a therapist learns that a client was fired, the belief in a just world (which implies determinism) may favor the subsequent inference that the person was incompetent in their job. However, if the therapist has a collectivist/communist view of the world that implies that one should follow the rules of our system (also a deterministic belief), associated to the metacognitive feeling of inevitability of that outcome, the therapist may infer that the client was fired because she/he is an independent and critical person.

However, research has not been clear if the subjective feeling of inevitability results from the coherence of combining several causes or if it results from the coherence associated to finding one strong cause. Future studies should explore how hindsight bias inform therapists' decisions and their evaluation of their cases.

Increasing counterfactual thinking

Contrary to the hindsight bias, counterfactual judgments help to create meaning about events that have occurred through the consideration of alternative scenarios that could have occurred if something had happened differently. Counterfactuals are thoughts of what might have been, of what could have happened if some past action had been different (Roese, 1997). "If she had trained harder, she would have won the match" is an example of a counterfactual conditional, embracing both an antecedent (a past action, here training harder) and a consequent (an unobtained outcome, here a victory). In general, counterfactuals consist of conditionals that connect actions to desired goals (Epstude & Roese, 2008; Morrison & Roese, 2011). Because counterfactuals make salient alternative outcomes, a straightforward assumption is that greater cognitive emphasis on counterfactuals decreases hindsight bias (e.g., because a victory could have happened, the factual loss was perhaps not so inevitable; see Kahneman & Varey, 1990; Slovic & Fischhoff, 1977). However, this tends to occur when the counterfactual scenario generated focuses on the alternative antecedent situation or process, rather than merely on an alternative outcome for the same process (Nario & Branscombe, 1995; Sanna, et al., 2002). In the case of alternative antecedent situations, generating counterfactuals can be a debiasing, or disconfirmatory, strategy (Nario & Branscombe, 1995; Tetlock, 2005). However, when counterfactual thinking spotlights a cause that consists of a strong explanation for the outcome, then the counterfactual contributes to greater hindsight bias by contributing to making sense of the outcome that occurred (Nestler & von Collani, 2008; Roese, 1999; Roese & Maniar, 1997; Roese & Olson, 1996), or in other words, through strengthening the feeling of inevitability. Overall,

sensemaking reflects a more elaborative process that builds from the more basic associative processes of knowledge updating. The more a person can make sense of the past, the greater the hindsight bias. A great part of therapists' work is to help their clients in making sense of the past and understanding which events or circumstances were inevitable and which could have happened differently. Further research should invest in understanding the benefits of hindsight bias in therapy and in which circumstances it leads to better understanding of the case.

Clinical judgments as motivated thinking

The motivational sources of clinical judgment processes

One of psychotherapy's primary goals is the reduction of the client's symptoms of psychological suffering and/or promotion of their well-being and mental health, hence clinical judgments made in the context of psychotherapy are, by definition, a motivated (goal-oriented) process. While therapists are engaged in achieving the ultimate goal of promoting the client's positive outcomes, they are also likely motivated to understand their cases accurately, even when it does not lead to immediately meeting their clients' urgent needs. Therapists can also be motivated to use a specific therapeutic approach they believe should be used in certain circumstances. Additionally, therapists may be motivated to improve their performance as therapists, for instance to decrease the number of dropout cases or to feel competent while performing their psychotherapy sessions. The diversity of therapists' motivations and needs when reasoning about their clients may thus follow the framework proposed by Molden and Higgins (2005) that considers two general classes of motivational thinking processes: outcome-motivated thinking and strategy-motivated thinking. Outcome-motivated thinking includes two types of outcomes: directional and non-directional. When people engage in processes that involve people's desires for reaching specific outcomes in their judgments, they are motivated by directional outcomes. In this condition people are interested in reaching specific desired conclusions, such as impressions of themselves as intelligent, caring, and worthy people (e.g., Dunning, 1999; Pyszczynski & Greenberg, 1987), or positive beliefs about others whom they find likeable or to whom they are especially close (e.g., Murray, 1999). For instance, when therapists are motivated to meet client's needs, such as reduce client's depressive symptoms they are making directionally motivated clinical judgments. When individuals are motivated by non-directional outcomes, they have more general concerns, such as reaching the most accurate conclusion possible (e.g., Fiske & Neuberg, 1990) or making a clear and concise decision (e.g., Kruglanski & Webster, 1996), regardless of the conclusion or decision that will be achieved. Strategy-motivated thinking, meanwhile, occurs when people desire to

use certain types of strategies while forming their judgments. For example, a person aiming for a positive self-image may prefer to eagerly gather information that provides a positive image (promotion focus) or may prefer to neglect and avoid negative information that may be disruptive for that positive self-image (prevention focus). Research has been showing how promotion focus induced, elicited the generation of more alternatives than prevention focus (Liberman, Molden, Idson, & Higgins, 2001; Molden & Higgins, 2004). While promotion focus is associated to generating the major alternatives possible, prevention focus is associated to select the most likely or plausible alternatives. This preference may have critical implications on therapist's implementation of psychotherapy modalities or specific techniques. For example, therapist that have a promotion focus may not be aligned with clinical judgments that demand conservative clinical judgments, such as an intervention for a patient with high risk of committing suicide. Strategies of motivated thinking can be dispositional but can also be induce experimentally, however less is known about how therapists can learn these preferences. This opens the space for future research testing the impact of promotion or prevention focus on psychotherapy and whether using a disconfirmatory strategy in the psychotherapy context would reflect a promotion or prevention focus should be tested.

Importantly, in the psychotherapy context, therapists' motivational influences may often overlap, and categorizing clinical judgments as directional outcome-motivated, non-directional outcome-motivated, or strategy-motivated thinking processes can contribute to the understanding of the factors and consequences of therapists' motivated thinking processes. In two empirical chapters (two and four) of this dissertation, we told participants that there were no correct answers and instructed them to understand the persons described as best as possible. This may have induced the motivation to be as accurate as possible. We also instructed participants to think about the person described as if they were the practitioner responsible for reducing the person's suffering, which might have induced the motivation for a positive outcome. Simultaneously, we were focused on understanding the strategies they used for making judgments, specifically whether hypothesis confirmatory vs. disconfirmatory, and manipulated the tasks characteristics (e.g. decomposing the information or not) and the contextual attribution of the behaviors of the person described. These instructions may have led to certain tendencies on the part of the participants in the research, described above.

Motivation for accuracy vs motivation for closure

Previous research demonstrated that high motivation for accuracy can attenuate assimilation effects by increasing the activation of alternative interpretations, whereas high motivation for closure can increase assimilation effects by decreasing the activation of alternative interpretations (Kruglanski & Freund, 1983; Schuette & Fazio, 1995; Sanbonmatsu & Fazio, 1990; Thompson et al., 1994). For

instance, in a task in which participants were asked to make a personality impression about an ambiguous behavior (adventurous or reckless), when need for closure was high, participants gave higher ratings for one or the other trait, depending on which one was salient. But, when participants were motivated to accuracy, they tended to give less weight to the personality traits (Ford & Kruglanski, 1995; Thompson et al., 1994), which suggests they were considering other alternative explanations for the person's behavior rather than the personality trait.

This research may suggest that the results obtained in chapter two may be explained by the participants' need for accuracy and need for closure (either as state or trait). If this is true, then our manipulation of task decomposability could be inducing different motivations. There is good reason to worry that the local processing condition might have activated a motivation toward accuracy in participants that the global condition did not activate. Specifically, the local condition may be inducing participants to feel high need for accuracy. In fact, asking the same question repeatedly may elicit the metacognition that it is very important to understand each piece and thus induce the motivation to understand the case accurately. However, there is not such a good argument that the conditions would have motivated differential levels of a motivation toward need for closure. If, on one hand we can argue that the global condition, in which information is processed as a whole in a single judgment at the end of the flux of information, may be inducing the need to find a final understanding of the case (high need for closure); on the other hand, knowing that there will be only one judgment moment may increase the need for high accuracy, and not closure. We recommend that further research test these hypotheses and explore the role of task characteristics on therapist's thinking motivations.

Moreover, if the hypothesis that more than one question about a topic induces high need for accuracy, or less feelings of rightness (discussed in the beginning of this chapter), which can both be accounts for higher consideration of alternative hypothesis, then in studies 3, 4, and 5 of chapter three we might also have triggered such motivations in participants. In these studies, participants were induced to make initial personality judgements about a target and then revise those initial judgments. The opportunity to make a second judgment could lead to higher adjustment of trait inferences than in a case when only one judgement is made. In other words, asking people to revise their judgment may lead to metacognitive feelings that the initial answer was not correct or that more ponderation of the information provided is needed, thus eliciting higher need for accuracy and cognition. The same would not occur for a task that asks for only one and does not request for its revision. However, we argue that do not reflect this need for accuracy, since all studies showed the same pattern of results. On the other hand, as reviewed above, the need to better understand a person and to attribute their behavior to a stable and reliable cause, such as personality, may explain the lack of sufficient adjustment when a psychological disorder explanation was presented, as opposed to a physical impairment explanation, as is the participants' task in the studies of chapters four and five.

Based on this perspective, we can argue that the stigma associated with a psychological disorder diagnosis may elicit high uncertainty about the person's behavior and, consequently, induce higher need for closure and higher confirmatory tendencies, than a condition of physical illness. This could then lead us to conclude that although motivational variables may play a role in the consideration of alternative hypothesis, task characteristics and beliefs about behavior may prevent the use of thinking processes associated with a high need for accuracy.

Individual variables on motivated thinking vs. mindset/contextual motivated thinking

Another source of a possible confound with motivational influence can be individual motivational variables. Research on clinical judgments has show that therapists' judgment methods tended to be consistent within each therapist but differed between therapists (Falvey, 2001). Specifically, outcomes for case formulation and treatment planning are relatively consistent both within and across cases for individual therapists, but not within or across groups of therapists (Falvey, 2001). This research suggests that personality characteristics play an important role in clinical judgments. Individual thinking variables, such as a general thinking style, may contribute to the judgment method used by therapists. *General thinking style* is conceptualized as a dispositional personality trait that manifests in a preference for a particular way of processing information and distinguishes between *experiential* and *rational* thinking styles, which are associated with intuitive and analytical reasoning, respectively (Epstein, et al., 1996; Pacini & Epstein, 1999; Stanovich & West, 2000). Thinking style has also been shown to influence the willingness of therapists to use evidence-based practices, as therapists with more rational (analytical) thinking styles were more willing to use evidence-based practices (Gaudiano, et al., 2011).

Thinking style can be considered a motivational variable, since it is a personal preference. The preference for one of the two thinking styles, rational and experiential, may reflect reliance on one of the two process (non-directional) motivations, namely need for cognition (e.g., Cacioppo & Petty, 1982), which is associated with need for accuracy (Fiske & Neuberg, 1990), and need for closure (Kruglanski & Webster, 1996). The need for cognition is the extent in which one engages in and shows preference for effortful thinking tasks (Cacioppo & Petty, 1982) and engages in thinking based on the desire for accuracy (Fiske & Neuberg, 1990); the need for closure refers to the desire for an end state of a cognitive task, regardless of the cognitive strategy and effort put into that task (Webster & Kruglanski, 1994). The effects of these two motivations may have opposing effects on information processing (see Molden & Higgins, 2005 for a review), which may lead to internal conflict in a context that simultaneously motivates accuracy (to meet the client's needs) and closure and clarity (to meet

the urgency of reducing suffering and symptoms in the minimum time possible) such as the context of clinical decision making.

Although in most research "need for cognition" and "need for closure" have been described as dispositional variables, research has shown that these motivations can be induced by task characteristics. For instance, in a task in which participants had to identify the reasons why another participant had to write an essay about a certain theme (knowing that the person was instructed by the experimenter to write in favor or against that theme), participant's primary hypothesis was the other person's own attitude guiding the essay in favor or against. However, when participants were motivated by accuracy, because they would be asked later to discuss their impressions, they did consider the alternative cause represented by the experimenter's assignment of topic and judged the attitude of the author to be neutral (Tetlock, 1985). In contrast, another study using a similar paradigm, showed that when participants were motivated toward closure, they showed a tendency to identify one single cause (Webster, 1993). This research represents evidence that need for accuracy and need for closure appear to have opposite effects on people's considerations of alternate causes during attribution (see Kruglanski & Freund, 1983; Kruglanski & Webster, 1996). Accordingly, accuracy motivation produces prolonged information search (for reviews see e.g., Eagly & Chaiken, 1993), and closure motivation produces reduced information search (e.g., Kruglanski, et al., 1993). Additionally, research found that high motivation for accuracy activates more idiosyncratic trait information and behavioral information when forming impressions of others (Kruglanski & Freund, 1983; Neuberg & Fiske, 1987), and people with high need for closure showed higher reliance on categorical information during impression formation (Dijksterhuis et al., 1996; Kruglanski & Freund, 1983; see also Moskowitz, 2005), which suggests that a higher need for accuracy facilitates more local and exemplar processing, while a higher need for closure facilitates categorization processes.

These opposing effects were also observed when people had to make impressions about others. In tasks in which people were motivated to better know a person (because they would lately be paired), they paid more attention to the interview and remembered more information about the interviewees than when they did not expect any future interactions (Berscheid, et al., 1976; see also Srull, et al., 1985). The opposite pattern, spending less time reading other's information and recalling less behavior, was found when people were motivated to closure (Dijksterhuis, et al., 1996). These evidence leads us to argue that therapists motivated to accuracy may have better conditions to understand their clients in a more comprehensive and complete way than therapists motivated to achieve quick symptom's improvement.

Pursuit of judgment strategies through implementation intentions

In the present research, we propose that the characteristics of the psychotherapy session may overwhelm any motivation therapists' have to use a disconfirmatory strategy and test alternative hypotheses when making clinical judgments.. Therapists who are motivated to use disconfirmatory processing, may have little control of the characteristics of the judgment task that elicit confirmatory processing, such as the decomposability of information, the automatic dispositional inference, or the activation of causal beliefs about behavior that guide their clinical judgments. This mismatch between therapists' goals and the judgment processes they use may be overcome by complementary processes of self-regulation that rely on the automatization of reasoning methods.

Research on self-regulation in the pursuit of one's goals has robustly demonstrated that when the motivational focus is not the final goal but rather the procedure to achieve that final goal, people accomplish their goals with higher success (Gollwitzer, 1999). These findings rely on the paradigm developed by Gollwitzer in which intentions to achieving a goal (goal intentions) are compared with intentions to follow a procedure (implementation intentions) (Gollwitzer, 1999). In this paradigm, participants are instructed to develop an if/then plan in order to regulate their intended action and pursue their goals. Implementation intentions are built on a theoretical framework positing that goal pursuit is comprised of two distinct cognitive tasks: the identification of a goal-relevant situation or opportunity to act (if a certain cue), and the initiation and enactment of a goal-directed response (then, a certain action). Thus, forming an implementation intention is proposed to facilitate goal pursuit by both increasing the accessibility of the situational cue and automating the response to that cue through situation–response linkages (Gollwitzer, 1993, 1999; Gollwitzer, et al., 2005).

To explore this research question, we conducted two preliminary studies testing how implementation intentions could help therapists to consider alternative therapeutic strategies. In one study, we asked therapists (N= 115), with more than 3 years of experience, to watch a video of a session excerpt, after which they were asked to select the most responsive therapeutic strategy. Subsequently, we manipulated the intention to complete the task: goal intention vs. implementation intention. In the goal intention condition, participants were told to achieve the goal to select different strategies to apply with the client described, while participants in the implementation intention condition were told to follow the procedural plan "if we are confident about a potentially responsive strategy to certain behaviors/symptoms, then we will formulate a new potential strategy for a different behavior/symptom". We expected that participants in the implementation intention condition would formulate more strategies than participants in the goal intention condition. Participants were randomly assigned to the goal intention condition or the implementation intention condition. All participants (both experimental conditions) were informed about the importance of considering

alternative strategies and were instructed that their goal was to consider alternative strategies for that client. After watching the client's excerpt, participants were asked to select, from several given strategies, the most responsive therapeutic strategy and subsequently to rate how confident they were in their answer, to elicit an evaluation of their feelings of rightness. After the first choice and confidence judgment, therapists were given a second opportunity to select the most responsive strategy (second judgment). Preliminary results comparing the proportion of participants that changed the selected strategy in the goal intention (46,7%) versus implementation intention (41,7%) conditions showed no differences (X^2 *(1)* = 3.30, p = .581) depending on the task instruction. We found that the proportion of participants selecting an alternative strategy depended on the responsiveness of the first choice (X^2 (2) = 5,725, p= .057), which suggests that participants that had already selected the most responsive strategy did not select a different therapeutic strategy. These results are interesting since they informed us that when therapists felt confident of their judgments, they tend to confirm their judgments despite being instructed to look for disconfirming evidence. In this study, the confirmatory tendency overlapped the most responsive strategy, leaving unclear whether participants would show a confirmatory tendency if none of strategies provided a priori were responsive towards client's needs.

We propose that future research should test how therapists can use if/then plans to test alternative hypothesis and reduce confirmatory tendencies if they are not responsive of client's needs. Specifically, we propose a further study in which participants are initially asked to achieve the goal of identifying the mechanisms maintaining a symptom of a fictitious client, by using divergent information seeking strategies. For example, participants would have to identify the maintaining mechanisms of social anxiety, by planning to question the client about several life domains such as, school or career, relevant and close relationships, distant relationships, other psychological symptoms, and protective factors (e.g., hobbies). To test whether forming an if–then plan facilitates achieving the previously defined goal, half of the participants would be asked to add an implementation intention specifying an if–then plan that spelled out when and how the participants were to act on this goal to making a divergent inquiry. Participants in the implementation intentions condition would then write the instruction, "if I identify a plausible mechanism (situation-cue) in one domain, then I will ask a question about a different topic (action-response)". The other half of the participants would receive identical task information on how to act on the goal (i.e., learn about all types of information) but without specifying a triggering situation to implement a divergent search for information. We hypothesize that participants in the implementation intentions condition would inquire about more different topics than participants in the goal intention condition. This study would test for the capacity to improve disconfirmatory searching of information. It is important to note, however, that this study would not elucidate therapists judgment methods (confirmatory vs. disconfirmatory) if they identified a technique or a treatment plan that already "felt right" and met client's needs. In other words, further

research should investigate if the automatization of disconfirmatory inquiry improves therapist's understanding of the client and their outcomes.

In the present research, we a) illuminated the conditions that lead to the different judgment methods underlying clinical judgments and explore therapists' judgment tasks when it is hard to use analytical processing; b) explored how the perception of others' behaviors and symptoms may lead to confirmatory processing of dispositional inferences; and c) contributed to the understanding of how mental illness stigma and causal attribution of psychological suffering influences dispositional attributions, moral judgments and attitudes about end-of-life decisions.

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Appendix A

Supplemental materials

Chapter 3 - Decomposing the clinical session: Task decomposability and confirmatory hypothesis testing in psychotherapy

Studies 1 and 2 – Case Example

#	Anne
1	I don't do things with excitement, like I used to. I don't feel like studying, I can't focus.
2	I have insomnia, and I often only fall asleep in the morning. Then I just end up staying home in my pajamas all day…I feel like I don't have energy to go do my usual long walks.
3	I'm always thinking I can't do anything, I can't stop thinking about it… I know I'm the one to blame for my own problems…
4	I think I've been able to make a life plan and setting what I have to do, step-by-step… When thinking about my problems, I thinking about stories of people I know and I realize my situations isn't that bad.
5	I'm so eager to end my legs treatment and leave this wheelchair behind. I know I shouldn't have crossed the road while the light was red… I just want to walk again and get back my routine at the University Campus.
6	I wanted to go on a big trip with my friends, spend some time in Asia, to meet new cultures.

Study 3 - Case Example

#	Ana
1	I don't do things with excitement like I used to. I don't feel like studying, I can't focus. I am feeling so blue, sad really.
2	I have insomnia, and I often only fall asleep when it's already morning. Then I just end up staying home in my pajamas, laying on the sofa, all day…I feel like I don't have the energy to go on my usual walks.
3	I'm always thinking I can't do anything, I can't stop thinking about it… I know I'm the one to blame for my own problems…
4	I think I've been able to make a life plan and setting what I have to do, step-by-step… When thinking about my problems, I think about stories of people I know and I realize my situation isn't that bad.
5	I'm so eager to end my treatment and leave this wheelchair behind. I know I shouldn't have crossed the road while the light was red… I just want to walk again and get back to my routine at the University Campus.
6	I just want to go on a big trip with my friends, spend some time in Asia, meet new cultures.
7	I am always stressed, regardless where I am or what I'm doing. I am always wondering about how things can turn bad.
8	I have been feeling so restless. My muscles are tense all the time. In the end of the day my back hurts so much. I'm always concerned…
9	I have very bad reactions to normal things, get annoyed with everyone, it seems I have no patience at all. It's stronger than me, I can't control this.

Study 4 – Case Example

#	Anne
1	I don't do things with excitement, like I used to. I don't feel like studying, I can't focus.
2	I have insomnia, and I often only fall asleep in the morning. Then I just end up staying home in my pajamas all day…I feel like I don't have energy to go do my usual long walks.
3	I'm always thinking I can't do anything, I can't stop thinking about it… I know I'm the one to blame for my own problems…
4	I think I've been able to make a life plan and setting what I have to do, step-by-step… When thinking about my problems, I thinking about stories of people I know and I realize my situations isn't that bad.
5	I am constantly thinking I need to scrub all the doorknobs and for a brief moment I feel relief when I do.
6	I waste so much time organizing everything around me that I'm not able to finish my job, and I know people mock me for that. But I just can't see things out of place, I get so stressed.

Appendix B

Supplemental materials

Chapter 4 – Psychological disorder diagnosis is no cure for trait inferences

Behavior	Indicated trait	Irrelevant information (control)	Physical impairment	Psychological disorder diagnosis
Ana does not do her weekend walks and just lays on the couch most of the time; she keeps watching a show she does not like only to avoid getting up and pick up the remote control.	*Lazy*	Ana eats cereals in the morning.	Ana broke her leg last week.	Ana has Depression.
Rui always follows all the steps of the procedure, even when it is not required; he reads the instructions numerous times and cleans the countertop several times per day.	*Perfectionist*	Rui watches a TV series before going to bed.	Rui is recovering from a neural lesion and has memory gaps	Rui has Obsessive Compulsive Disorder
Laura is afraid her new employees do not understand her; she does not accept to present her project because she believes she will not be able to defend her ideas.	*Insecure*	Laura watches TV by the end of the day.	Laura just had a tonsillectomy and is aphonic.	Laura has Generalized Anxiety.
Manuel watches his neighbors' homes to check who enters and leaves; every time a new person arrives in the neighborhood, Manuel wants to know their routines and habits.	*Snooper*	Manuel drinks juice in the morning	Manuel has prosopagnosia. (difficulty to recognize faces) and uses context cues to identify a person.	Manuel has Paranoid Schizophrenia.
Pedro talks about himself all and his work all the time; he shows more than 100 photos of his time in India and tells the story behind each photo.	*Egocentric*	Pedro eats fruit after lunch.	Pedro has amnesia resulting from a car accident and is doing memory exercises.	Pedro has Narcissistic Personality Disorder.

Maria does not go her favorite bands' concerts because she knows there will be a huge crowd; she does not use public transportation when she is alone.	*Fearful*	Maria eats tomato with basil.	Maria had a car accident and has to use a wheelchair for one month.	Maria has Agoraphobia.

Appendix C

Results of Chapter 5 – Body over mind: The effect of causal attribution on perceived competence and euthanasia acceptance – including order of causal attribution conditions

Study 1A

For each judgment (state depression, trait depression, moral acceptability and competence), ratings were entered into a repeated measures ANOVA with Diagnosis (Mental Illness vs. Physical Illness) as the independent within-participants variable and order of presentation of diagnosis condition (Physical 1st vs. Mental 1st) as between-participants variables.

We found a main effect of diagnosis in all ratings: state depression, trait depression, moral acceptability and competence. We found a main effect of diagnosis on state depression, F(1,63) = 35.42, p < .001, η²partial = .36 (M_{MI} = 8.40, SE_{MI} = .09; M_{PI} = 7.65, SE_{PI} = .11), in which the mental illness diagnosis led to higher depression state ratings than did the physical illness diagnosis. We found a main effect of presentation order, $F(1,63) = 8.82$, $p = .004$, $\eta^2_{partial} = .12$, in which ratings were higher when mental illness was presented first (M_{PI1st} = 8.24, SE_{PI1st} = .11; M_{MI1st} = 7.80, SE_{MI1st} = .11), ratings were higher when cases of mental illness were presented first. We found no interaction effect between diagnosis and order, $F(1,63) = 2.33$, $p = .132$, $\eta^2_{partial} = .04$.

We also found a main effect of diagnosis on trait ratings of depression, in which the mental illness diagnosis led to higher trait ratings of depression than the physical illness diagnosis, F(1,63) = 68.26, p < .001, η²partial = .52 (M_{MI} = 7.20, SE_{MI} = 0.22; M_{PI} = 5.65, SE_{PI} = .22). We found no main order effect, $F(1,63) = .21$, $p = .650$, $\eta^2_{partial} = .00$ (M_{PI1st} = 6.43, SE_{PI1st} = .28; M_{MI1st} = 6.41, SE_{MI1st} = .28) and no interaction effect between diagnosis and order, $F(1,63) = .84$, $p = .364$, $\eta^2_{partial} = .01$. When comparing moral acceptance of euthanasia, we also found a main effect of diagnosis in acceptance ratings, $F(1,63) = 18.83$, $p < .001$, $\eta^2_{partial} = .23$ (M_{MI} = 3.32, SE_{MI} = .22; M_{PI} = 4.27, SE_{PI} = .22). Euthanasia was considered less morally acceptable when the person was diagnosed with mental illness than when she was diagnosed with a physical illness. We found no order effect, $F(1,63) = .01$, $p = .943$, $\eta^2_{partial}$ = .00 (M_{PI1st} = 3.78, SE_{PI1st} = .26; M_{MI1st} = 3.81, SE_{MI1st} = .28) and found an interaction effect between diagnosis and order, $F(1,63) = 5.06$, $p = .028$, $\eta^2_{partial} = .07$, in which the effect was stronger when mental illness was presented (M_{PI} = 4.55, SE_{PI} = .32, M_{MI} = 3.07, SE_{MI} = .32) than when physical illness was presented first (M_{PI} = 4.02, SE_{PI} = .31, M_{MI} = 3.54, SE_{MI} = .30). These results may suggest that after

accepting euthanasia for cases of physical illness, participants may feel the need to be congruent, and benevolent, for conceptually similar cases, which reduces the difference in the acceptability of euthanasia between physical and mental illness cases.

We found a main effect of diagnosis in the perceived competence of patients, $F(1,64) = 111.25$, $p < .001$, $\eta^2_{partial} = .64$ ($M_{MI} = 2.80$, $SE_{MI} = .18$; $M_{PI} = 4.82$, $SE_{PI} = .18$). When unbearable suffering was labeled as caused by a mental illness, patients were perceived to have lower competence to make the decision to request euthanasia than when unbearable suffering was labeled as caused by a physical illness. We found no main effect of order, $F(1,63) = .01$, $p = .943$, $\eta^2_{partial} = .00$ ($M_{PI1st} = 3.74$, $SE_{PI1st} = .22$; $M_{MI1st} = 3.89$, $SE_{MI1st} = .23$) and found no interaction effect between diagnosis and order, $F(1,63) = .01$, $p = .909$, $\eta^2_{partial} = .00$.

Study 1B

For each judgment (state depression, trait depression, moral acceptability and competence), ratings were entered into a repeated measures ANOVA with Diagnosis (Mental Illness vs. Physical Illness) as the independent within-participants variable and order of presentation of diagnosis condition (Physical 1st vs. Mental 1st) as between-participants variables.

We found a main effect of diagnosis in all ratings: state depression, trait depression, moral acceptability and competence. We found a main effect of diagnosis on state depression, in which the mental illness diagnosis led to higher state depression ratings than the physical illness diagnosis, $F(1,80) = 17.85$, $p < .001$, $\eta^2_{partial} = .19$ ($M_{MI} = 8.19$, $SE_{MI} = .16$; $M_{PI} = 7.69$, $SE_{PI} = .17$). We found no main effect of order, $F(1,79) = .67$, $p = .416$, $\eta^2_{partial} = .01$ ($M_{PI1st} = 8.07$, $SE_{PI1st} = .22$; $M_{MI1st} = 7.82$, $SE_{MI1st} = .21$). We found no interaction effect between cause of suffering and order, $F(1,79) = .71$, $p = .402$, $\eta^2_{partial} = .01$.

We also found a main effect of diagnosis on trait depression, in which the mental illness diagnosis led to higher trait depression ratings than the physical diagnosis, $F(1,79) = 17.64$, $p < .001$, $\eta^2_{partial} = .18$ ($M_{MI} = 7.83$, $SE_{MI} = .17$; $M_{PI} = 7.17$, $SE_{PI} = .19$). We found no main effect of order, $F(1,) = .85$, $p = .358$, $\eta^2_{partial} = .01$ ($M_{PI1st} = 7.65$, $SE_{PI1st} = .23$; $M_{MI1st} = 7.36$, $SE_{MI1st} = .22$). We found no interaction effect between diagnosis and presentation order, $F(1,79) = .62$, $p = .435$, $\eta^2_{partial} = .01$.

When comparing the acceptance of euthanasia, we found a main effect of diagnosis, demonstrating that euthanasia was considered less morally acceptable when the patient was diagnosed with a mental illness than a physical one, $F(1,79) = 32.01$, $p < .001$, $\eta^2_{partial} = .29$ ($M_{MI} = 2.81$, $SE_{MI} = .20$; $M_{PI} = 3.89$, $SE_{PI} = .22$). We found no main effect of order, $F(1,79) = 1.26$, $p = .266$, $\eta^2_{partial} = .02$ ($M_{PI1st} = 3.14$, $SE_{PI1st} = .27$; $M_{MI1st} = 3.55$, $SE_{MI1st} = .26$). We found no interaction effect between diagnosis and presentation order, $F(1,79) = .50$, $p = .482$, $\eta^2_{partial} = .01$.

We also found a main effect of diagnosis in the patient's perceived competence, in which a mental illness diagnosis led to lower perceived competence to make a euthanasia decision than a physical illness diagnosis did, $F(1,79) = 61.59$, $p < .001$, $\eta^2_{partial} = .44$ ($M_{MI} = 3.89$, $SE_{MI} = .21$; $M_{PI} = 5.17$, $SE_{PI} = .19$). We found no main effect of order, $F(1,79) = .79$, $p = .377$, $\eta^2_{partial} = .01$ ($M_{PI1st} = 4.70$, $SE_{PI1st} = .27$; $M_{MI1st} = 4.37$, $SE_{MI1st} = .26$). We found no interaction effect between diagnosis and presentation order, $F(1,79) = .50$, $p = .482$, $\eta^2_{partial} = .01$.

Study 1C

We conducted the same analysis of study 1A. For each judgment (state depression, trait depression, moral acceptability and competence) ratings were entered into a repeated measures ANOVA with diagnosis (Mental Illness vs. Physical Illness) as the independent variable within participants and order of presentation of diagnosis condition (Physical 1st vs. Mental 1st) as between-participants variables.

We found a main effect of diagnosis in all ratings: state depression, trait depression, moral acceptability and competence. We found a main effect of diagnosis in the state depression, in which the mental illness led to higher judgement of depressive mood than the physical illness, $F(1,49) = 8.16$, $p = .006$, $\eta^2_{partial} = .15$ ($M_{MI} = 7.94$, $SE_{MI} = .16$; $M_{PI} = 7.43$, $SE_{PI} = .21$). We found no main effect of order, $F(1,48) = .54$, $p = .466$, $\eta^2_{partial} = .01$ ($M_{PI1st} = 7.80$, $SE_{PI1st} = .22$; $M_{MI1st} = 7.55$, $SE_{MI1st} = .24$). We found an interaction effect diagnosis and order, $F(1,48) = 3.83$, $p = .056$, $\eta^2_{partial} = 07$. in which the effect is stronger when physical illness is presented first ($M_{PI} = 7.39$, $SE_{PI} = .29$, $M_{MI} = 8.20$, $SE_{MI} = .21$) than when mental illness is presented first ($M_{PI} = 7.48$, $SE_{PI} = .31$, $M_{MI} = 7.63$, $SE_{MI} = .23$).

We also found a main effect of diagnosis in the trait depression, in which the mental illness diagnosis led to higher trait inferences than the physical diagnosis, $F(1,48) = 25.20$, $p < .001$, $\eta^2_{partial} = .34$ ($M_{MI} = 7.28$, $SE_{MI} = .21$; $M_{PI} = 6.15$, $SE_{PI} = .29$). We found no main effect of order, $F(1,48) = .15$, $p = .704$, $\eta^2_{partial} = .00$ ($M_{PI1st} = 6.80$, $SE_{PI1st} = .31$; $M_{MI1st} = 6.62$, $SE_{MI1st} = .34$). We found no interaction effect between diagnosis and order, $F(1,48) = .40$, $p = .531$., $\eta^2_{partial} = .01$.

Moreover, we found a main effect of diagnosis in judgments of moral acceptance of euthanasia, in which euthanasia was considered less morally acceptable when the person was diagnosed with mental illness than when the person was diagnosed with physical illness, $F(1,48) = 12.64$, $p = .001$, $\eta^2_{partial} = .21$ ($M_{MI} = 3.40$, $SE_{MI} = .27$; $M_{PI} = 4.04$, $SE_{PI} = .26$). We found no main effect of order, $F(1,48) = .15$, $p = .701$, $\eta^2_{partial} = .00$ ($M_{PI1st} = 3.81$, $SE_{PI1st} = .33$; $M_{MI1st} = 3.62$, $SE_{MI1st} = .35$). We found an interaction effect between diagnosis and order, $F(1,48) = 11.98$, $p = .001$, $\eta^2_{partial} = .20$, in which the effect is stronger when mental illness is presented first ($M_{PI} = 4.30$, SE_{PI}, $= .38$; $M_{MI} = 2.94$, $SE_{MI} = .39$) than when physical illness is presented first ($M_{PI} = 3.82$, $SE_{PI} = .35$, $M_{MI} = 3.80$, $SE_{MI} = .36$).

We also found a main effect of diagnosis in the perceived competence, in which patients diagnosed with a mental illness were perceived as less competent to make decisions about their life then patients diagnosed with a physical illness, $F(1,48) = 34.62$, $p < .001$, $\eta^2_{partial} = .42$ ($M_{MI} = 3.15$, $SE_{MI} = .23$; $M_{PI} = 4.56$, $SE_{PI} = .23$). We found no main effect of order, $F(1,48) = .86$, $p = .357$, $\eta^2_{partial} = .02$ ($M_{PI1st} = 4.01$, $SE_{PI1st} = .26$; $M_{MI1st} = 3.66$, $SE_{MI1st} = .28$). We found an interaction effect between diagnosis and order, $F(1,48) = 11.98$, $p = .001$, $\eta^2_{partial} = .20$, in which the effect is stronger when mental illness is presented first ($M_{PI} = 4.67$, $SE_{PI} = .35$; $M_{MI} = 2.65$, $SE_{MI} = .32$) than when physical illness is presented first ($M_{PI} = 4.46$, $SE_{PI} = .32$, $M_{MI} = 3.57$, $SE_{MI} = .30$)

Study 2A

For each variable (state depression, trait depression, current suffering, and future suffering moral acceptability competence, ratings were entered into a repeated measures ANOVA with Cause of Suffering (Psychological Trauma vs. Physical Trauma) as the independent within-participants variable and Order of presentation of cause condition (Physical 1st vs. Mental 1st) as between-participants variables.

We found a main effect of cause of suffering in all ratings, except for the state depression variable. We found a main effect of cause of suffering in the state depression, $F(1,72) = 8.35$, $p = .005$, $\eta^2_{partial} = .10$, in which psychological trauma led to higher state depression ratings than a physical trauma ($M_{PsyT} = 8.05$, $SE_{PsyT} = .13$; $M_{PhyT} = 7.61$, $SE_{PhysT} = .13$). We found no order effect, $F(1,72) = 1.60$, $p = .210$, $\eta^2_{partial} = .02$ ($M_{PhyT1st} = 7.95$, $SE_{PhyT1st} = 13$; $M_{PsyT1st} = 7.71$, $SE_{PhyT1st} = .16$). We found no interaction effect between cause of suffering and order, $F(1,72) = 1.50$, $p = .233$, $\eta^2_{partial} = .02$.

We found no main effect of cause of suffering in trait depression, $F(1,72) = 1.81$, $p = .183$, $\eta^2_{partial} = .03$ ($M_{PsyT} = 6.66$, $SE_{PsyT} = .19$; $M_{PhyT} = 6.35$, $SE_{PhysT} = .22$). We found no order effect, $F(1,72) = .40$, $p = .842$, $\eta^2_{partial} = .00$ ($M_{PhyT1st} = 6.54$, $SE_{PhyT1st} = .23$; $M_{PsyT1st} = 6.47$, $SE_{PhyT1st} = 24$). We found an interaction effect between cause of suffering and presentation order, $F(1,72) = 5.40$, $p = .023$, $\eta^2_{partial} = .07$, in which the effect is stronger when mental illness is presented first ($M_{PsyT} = 7.39$, $SE_{PsyT} = .17$; $M_{PhyT} = 8.03$, $SE_{PhysT} = .18$) than when physical illness is presented first ($M_{PsyT} = 7.82$, $SE_{PsyT} = .17$; $M_{PhyT} = 8.08$, $SE_{PhysT} = .18$).

We also found a main effect of causal attribution in the perceived current suffering, $F(1,72) = 7.02$, $p = .010$, $\eta^2_{partial} = .09$, in which attributing suffering to a psychological trauma led participants to rate the target as suffering more at the present moment than did attributing the suffering to a physical trauma ($M_{PsyT} = 5.74$, $SE_{PsyT} = .12$; $M_{PhyT} = 5.35$, $SE_{PhysT} = .12$). We found no order effect, $F(1,72) = 1.12$, $p = .294$, $\eta^2_{partial} = .02$ ($M_{PhyT1st} = 5.65$, $SE_{PhyT1st} = .13$; $M_{PsyT1st} = 5.44$, $SE_{PhyT1st} = .14$). We found no

interaction effect between cause of suffering and presentation order, $F(1,72) = .57$, $p = .452$, $\eta^2_{partial} = .01$.

We found no main effect of causal attribution in perceived future suffering, $F(1,72) = 2.53$, $p = .116$, $\eta^2_{partial} = .03$ ($M_{PsyT} = 4.50$, $SE_{PsyT} = .16$; $M_{PhyT} = 4.85$, $SE_{PhysT} = .16$). We found no order effect, $F(1,72) = 1.01$, $p = .319$, $\eta^2_{partial} = .01$ ($M_{PhyT1st} = 4.79$, $SE_{PhyT1st} =. 16$; $M_{PsyT1st} = 4.56$, $SE_{PhyT1st} = .17$). We found no interaction effect between cause of suffering and presentation order, $F(1,72) = 1.85$, $p = .179$, $\eta^2_{partial} = .03$.

When comparing judgments of moral acceptance of euthanasia, we found a main effect of cause of suffering, in which euthanasia was considered less morally acceptable when the unbearable suffering was caused by a psychological trauma than by a physical trauma, $F(1,72) = 22.46$, $p < .001$, $\eta^2_{partial} = .24$ ($M_{PsyT} = 2.35$, $SE_{PsyT} = .20$; $M_{PhyT} = 3.58$, $SE_{PhysT} = .20$). We found order effect, $F(1,72) = 1.45$, $p = .233$, $\eta^2_{partial} = .02$ ($M_{PhyT1st} = 3.15$, $SE_{PhyT1st} = .21$; $M_{PsyT1st} = 2.78$, $SE_{PhyT1st} = .22$). We found no interaction effect between cause of suffering and presentation order, $F(1,72) = .64$, $p = .425$, $\eta^2_{partial} = .01$.

Individuals were also perceived as less competent when their suffering was caused by psychological trauma than by a physical trauma, $F(1,72) = 16.01$, $p < .001$, $\eta^2_{partial} = .18$ ($M_{PsyT} = 3.24$, $SE_{PsyT} = .25$; $M_{PhyT} = 4.39$, $SE_{PhysT} = .23$). We found no order effect, $F(1,72) = .41$, $p = .685$, $\eta^2_{partial} = .01$ ($M_{PhyT1st} = 3.96$, $SE_{PhyT1st} = .25$; $M_{PsyT1st} = 3.67$, $SE_{PhyT1st} = .25$). We found an interaction effect between cause of suffering and presentation order, $F(1,72) = 12.63$, $p = .001$, $\eta^2_{partial} = .15$, in which the effect is stronger when mental illness is presented first ($M_{PsyT} = 4.78$, $SE_{PsyT} = .32$; $M_{PhyT} = 2.56$, $SE_{PhysT} = .38$) than when physical illness is presented first ($M_{PsyT} = 4.03$, $SE_{PsyT} = .32$; $M_{PhyT} = 3.90$, $SE_{PhysT} = .33$).

Study 2B

For each variable (state depression, trait depression, current suffering, future suffering, moral acceptability, and competence), ratings were entered into a repeated measures ANOVA with Cause of Suffering (Psychological Trauma vs. Physical Trauma) as the independent within-participants variable and the presence of diagnosis of mental illness (Diagnosis vs. No Diagnosis) and order of presentation of diagnosis condition (Physical 1st vs. Mental 1st) as between-participants variables.

We found a main effect of cause of suffering in the state depression which was the reverse of results from previous studies, $F(1,66) = 14.01$, $p < .001$, $\eta^2_{partial} = .18$, indicating more depressive moods for physical than for psychological cause ($M_{PsyT} = 6.49$, $SE_{PsyT} = .13$; $M_{PhyT} = 6.06$, $SE_{PhysT} = .10$). No main effect of mental illness diagnosis, $F(1,66) = .16$, $p = .687$, $\eta^2_{partial} = .00$ ($M_{Diag} = 6.31$, $SE_{NoDiag} = .14$; $M_{Diag} = 6.24$, $SE_{NoDiag} = .14$), and no interaction effect between cause of suffering and diagnosis, $F(1,66) = 1.31$, $p = .256$, $\eta^2_{partial} = .02$, were found. We found no order effect, $F(1,66) = 1.88$, $p = .175$, $\eta^2_{partial} =$

.03 ($M_{PhyT1st}$ = 6.43, $SE_{PhyT1st}$ = .14; $M_{PsyT1st}$ = 6.13, $SE_{PhyT1st}$ = .15). We found no interaction effect between cause of suffering and order, F(1,66) = .32, p = .574, $\eta^2_{partial}$ = .01; no interaction effect between mental illness diagnosis and order, F(1,66) = .30, p = .589., $\eta^2_{partial}$ = .004; no third order interaction effect, F(1,66) = .17, p = .681, $\eta^2_{partial}$ = .00.

For the trait depression, we found no main effect of cause of suffering, F(1,66) = 2.74, p = .103, $\eta^2_{partial}$ = .04 (M_{PsyT} = 5.55, SE_{PsyT} = .13; M_{PhyT} = 5.36, SE_{PhysT} = .14), no main effect of diagnosis, F(1,66) = .10, p = .753, $\eta^2_{partial}$ = .00 (M_{Diag} = 5.42, SE_{Diag} = .17; M_{NoDiag} = 5.50, SE_{NoDiag} = .17), but found an interaction effect between cause of suffering and diagnosis, F(1,66) = 4.25, p = .043, $\eta^2_{partial}$ = .06. Pairwise comparisons showed that when the person was diagnosed with Depression, explaining the suffering with a psychological trauma led to higher depressive trait ratings than a physical cause of suffering (p = .010). However, there were no differences in depressive trait attributions between psychological and physical causes when the person was not diagnosed with Depression (p = .734)**.** This result indicates that after an individual is labeled with a Depression diagnosis, depressive trait inferences about that individual become sensitive to the nature of the cause of the individual's suffering, otherwise such causal explanations of suffering do not seem to imply dispositional inferences of depression. We found no order effect, F(1,66) = .10, p = .753, $\eta^2_{partial}$ = .00 ($M_{PhyT1st}$ = 5.42, $SE_{PhyT1st}$ = .17; $M_{PsyT1st}$ = 5.49, $SE_{PhyT1st}$ = .17). We found no interaction effect between cause of suffering and order, F(1,66) = 2.74, p = .103, $\eta^2_{partial}$ = .04; no interaction effect between mental illness diagnosis and order, F(1,66) = 1.67, p = .201, $\eta^2_{partial}$ = .03; no third order interaction effect, F(1,66) = .04, p = .84, $\eta^2_{partial}$ = .00.

We found a main effect of cause of suffering on perceived current suffering, F(1, 66) = 15.89, p < .001, $\eta^2_{partial}$ = .20, showing higher suffering for the psychological trauma than for the physical trauma (M_{PsyT} = 5.81, SE_{PsyT} = .12; M_{PhyT} = 5.36, SE_{PhysT} = .13). We found no main effect of mental illness diagnosis, F(1, 66) = .10, p = .757, $\eta^2_{partial}$ = .00 (M_{Diag} = 5.61, SE_{Diag} = .15; M_{NoDiag} = 5.56, SE_{NoDiag} = .15), and no interaction effect between cause of suffering and diagnosis F(1, 66) = .35, p = .556, $\eta^2_{partial}$ = .01. We found no order effect, F(1,66) = .08, p = .782, $\eta^2_{partial}$ = .00 ($M_{PhyT1st}$ = 5.56, $SE_{PhyT1st}$ = 15; $M_{PsyT1st}$ = 5.61, $SE_{PhyT1st}$ = .16). We found no interaction effect between cause of suffering and order, F(1,66) = 1.06, p = .306 , $\eta^2_{partial}$ = .02 ; no interaction effect between mental illness diagnosis and order, F(1,66) = 1.79, p = .186, $\eta^2_{partial}$ = .03; and a third order interaction effect, F(1,66) = 5.85, p = .018 , $\eta^2_{partial}$ = .08.

For perceived future suffering, we found a main effect of cause of suffering, F(1, 66) = 5.21, p = .026, $\eta^2_{partial}$ = .07, indicating lower future suffering for the psychological trauma than for the physical trauma, reversing the pattern of results observed for the present suffering and replicating Study 2A (M_{PsyT} = 4.75, SE_{PsyT} = .14; M_{PhyT} = 5.07, SE_{PhysT} = .14). There was also a marginal main effect of diagnosis, F(1,66) = 3.09, p = .083, $\eta^2_{partial}$ = .05, suggesting higher future suffering for diagnosed individuals (M_{Diag}

= 5.13, SE_{Diag} = .18; M_{NoDiag} = 4.69, SE_{NoDiag} = .14), but no interaction effect between cause and diagnosis was found, $F(1,66) = .25$, $p = .622$, $\eta^2_{partial} = .00$. We found no order effect, $F(1,66) = .00$, $p = .978$, $\eta^2_{partial} = .00$ ($M_{PhyT1st}$ = 4.90, $SE_{PhyT1st}$ = .17; $M_{PsyT1st}$ = 4.91, $SE_{PhyT1st}$ = .18). We found no interaction effect between cause of suffering and order, $F(1,66) = .24$, $p = .622$. , $\eta^2_{partial} = .00$; no interaction effect between mental illness diagnosis and order, $F(1,66) = .28$, $p = .598$, $\eta^2_{partial} = .00$; no third order interaction effect, $F(1,66) = .09$, $p = .767$, $\eta^2_{partial} = .00$.

We also found a main effect of cause of suffering in moral acceptance of euthanasia, in which euthanasia was considered less morally acceptable when the unbearable suffering was caused by a psychological trauma then to a physical trauma, $F(1,68) = 22.92$, $p < .001$, $\eta^2_{partial} = .26$ (M_{PsyT} = 2.48, SE_{PsyT} = .20; M_{PhyT} = 3.24, SE_{PhysT} = .21). We found no main effect of diagnosis, $F(1,68) = 1.77$, $p = .189$, $\eta^2_{partial} = .03$ (M_{Diag} = 3.10, SE_{Diag} = .26; M_{NoDiag} = 2.62, SE_{NoDiag} = .27), and no interaction effect between cause of suffering and mental illness diagnosis, $F(1,68) = 2.15$, $p = .148$, $\eta^2_{partial} = .03$. Although we found no interaction effect, presenting the diagnosis of Depression led to marginally higher acceptance of euthanasia when suffering was caused by a psychological trauma than when no label was present (p = .075), but the presentation of a diagnosis of Depression did not change euthanasia acceptance when suffering was caused by a physical trauma (p = .564). This result suggests that diagnosis labels may in part legitimate the patient's suffering with a psychological cause. We found no order effect, $F(1,66) = 3.17$, $p = .080$, $\eta^2_{partial} = .05$ ($M_{PhyT1st}$ = 3.18, $SE_{PhyT1st}$ = .26; $M_{PsyT1st}$ = 2.52, $SE_{PhyT1st}$ = .27). We found no interaction effect between cause of suffering and order, $F(1,66) = 2.15$, $p = .148$, $\eta^2_{partial} = .03$; no interaction effect between mental illness diagnosis and order, $F(1,66) = .74$, $p = .394$, $\eta^2_{partial} = .01$; and a third order interaction effect, $F(1,66) = 4.88$, $p = .031$, $\eta^2_{partial} = .07$, that is non-interpretable.

We found a main effect of cause of suffering in perceived competence, that replicated previous studies, $F(1,66) = 22.84$, $p < .001$, $\eta^2_{partial} = .26$, in which explaining suffering with a psychological trauma led to lower competence ratings than explaining suffering with a physical trauma (M_{PsyT} = 3.07, SE_{PsyT} = .23; M_{PhyT} = 3.96, SE_{PhysT} = .23). This was qualified by an interaction effect between cause of suffering and diagnosis, $F(1,66) = 4.61$, $p = .035$, $\eta^2_{partial} = .07$, which suggested that the discrepancy in competence judgments between physical and psychological causes is larger when no mental illness label categorizes the unbearable suffering. We found no main effect of mental illness diagnosis, $F(1,68) = .02$, $p = .876$, $\eta^2_{partial} = .00$ (M_{Diag} = 3.47, SE_{Diag} = .29; M_{NoDiag} = 3.56, SE_{NoDiag} = .30). In other words, when judging an individual's competence, a depression diagnosis label reduced judgments' sensitivity to the psychological or physical nature of the experienced suffering, suggesting that the Depression label may entail a representation of the patient's competence that is independent of the cause of suffering. We found an order effect, $F(1,66) = 4.03$, $p = .049$, $\eta^2_{partial} = .06$ ($M_{PhyT1st}$ = 3.92, $SE_{PhyT1st}$ = .29; $M_{PsyT1st}$ = .09, $SE_{PhyT1st}$ = .30). We found an interaction effect between cause of suffering and order, $F(1,66) = 4.61$, $p = .035$, $\eta^2_{partial} = .07$, in which the effect is stronger when mental illness is

presented first (M_{PsyT} = 3.75, SE_{PsyT} = .34; M_{PhyT} = 2.43, SE_{PhysT} = .31) than when physical illness is presented first (M_{PsyT} = 4.17, SE_{PsyT} = .33; M_{PhyT} = 3.67, SE_{PhysT} = .30) We found no interaction effect between mental illness diagnosis and order, $F(1,66) = .02$, $p = .876$, $\eta^2_{partial} = .00$; and no third order interaction effect, $F(1,66) = .04$, $p = .848$, $\eta^2_{partial} = .00$.

Study 2C

For each variable (state depression, trait depression, current suffering, future suffering, moral acceptability, and competence), ratings were entered into a repeated measures ANOVA with Cause of Suffering (Psychological Trauma vs. Physical Trauma) as the independent within-participants variable and the presence of diagnosis of mental illness (Diagnosis vs. No Diagnosis) and order of presentation of diagnosis condition (Physical 1st vs. Mental 1st) as between-participants variables.

We found no main effect of cause of suffering in state depression, $F(1,77) = .46$, $p = .498$, $\eta^2_{partial} = .01$ (M_{PsyT} = 6.57, SE_{PsyT} = 0.09; M_{PhyT} = 6.50, SE_{PhysT} = 0.08); no main effect of mental illness diagnosis, $F(1,77) = 2.20$, $p = .142$, $\eta^2_{partial} = .03$ (M_{Diag} = 6.64, SE_{Diag} = 0.10; M_{NoDiag} = 6.42, SE_{NoDiag} = 0.11); and no interaction effect between cause of suffering and diagnosis, $F(1,77) = .40.$, $p = .530$, $\eta^2_{partial} = .01$. We found no main effect of order $F(1,77) = .08$, $p = .774$, $\eta^2_{partial} = .00$ ($M_{PhyT1st}$ = 6.55, $SE_{PhyT1st}$ = .10; $M_{PsyT1st}$ = 6.51, $SE_{PhyT1st}$ = .10). We found an interaction effect between cause of suffering and order, $F(1,77) = 5.45$, $p = .022$, $\eta^2_{partial} = .07$, in which the effect is stronger when mental illness is presented first (M_{PsyT} = 6.38, SE_{PsyT} = .12; M_{PhyT} = 6.65, SE_{PhysT} = .13) than when physical illness is presented first (M_{PsyT} = 6.63, SE_{PsyT} = .11; M_{PhyT} = 6.48, SE_{PhysT} = .13). We found no interaction effect between mental illness diagnosis and order, $F(1,77) = .15$, $p = .704$, $\eta^2_{partial} = .00$; and no third order interaction effect, $F(1,77) = 1.66$, $p = .202$, $\eta^2_{partial} = .02$.

For the trait depression, we found no main effect of cause of suffering, $F(1,77) = 2.33$, $p = .131$, $\eta^2_{partial} = .03$ (M_{PsyT} = 6.21, SE_{PsyT} = 0.11; M_{PhyT} = 6.05, SE_{PhysT} = 0.11). However the main effect of mental illness diagnosis was significant, $F(1,77) = 6.29$, $p = .014$, $\eta^2_{partial} = .08$, in that the diagnosis of Depression led to higher depressive trait inferences than no-diagnosis (M_{Diag} = 6.37, SE_{Diag} = 0.13; M_{NoDiag} = 5.90, SE_{NoDiag} = 0.14). No interaction was found between cause of suffering and diagnosis, $F(1,77) = .12$, $p = .726$, $\eta^2_{partial} = .00$. We found no main effect of order $F(1,77) = .26$, $p = .614$, $\eta^2_{partial} = .00$ ($M_{PhyT1st}$ = 6.09, $SE_{PhyT1st}$ = .13; $M_{PsyT1st}$ = 6.19, $SE_{PhyT1st}$ = .14). We found no interaction effect between cause of suffering and order, $F(1,77) = 2.33$, $p = .131$, $\eta^2_{partial} = .03$; no interaction effect between mental illness diagnosis and order, $F(1,77) = 2.41$, $p = .224$, $\eta^2_{partial} = .03$; and no third order interaction effect, $F(1,77) = .12$, $p = .726$, $\eta^2_{partial} = .00$.

We found no main effect of cause of suffering on perceived current suffering, $F(1, 77) = 1.65$, $p = .203$, $\eta^2_{partial} = .02$ (M_{PsyT} = 5.37, SE_{PsyT} = 0.13; M_{PhyT} = 5.48, SE_{PhysT} = 0.12); no main effect of mental

illness diagnosis, $F(1, 77) = 2.09$, $p = .153$, $\eta^2_{partial} = .03$ ($M_{Diag} = 5.71$, $SE_{Diag} = 0.16$; $M_{NoDiag} = 5.28$, $SE_{NoDiag} = 0.16$); and no interaction effect between cause and diagnosis $F(1, 77) = .54$, $p = .465$, $\eta^2_{partial} = .007$. We found a main effect of order $F(1,77) = .8.51$, $p = .005$, $\eta^2_{partial} = .10$, in which ratings were higher when psychological trauma was presented first ($M_{PhyT1st} = 5.11$, $SE_{PhyT1st} = .15$; $M_{PsyT1st} = 5.75$, $SE_{PhyT1st} = .16$). We found no interaction effect between cause of suffering and order, $F(1,77) = .05$, $p = .831$, $\eta^2_{partial} = .00$; no interaction effect between mental illness diagnosis and order, $F(1,77) = .39$, $p = .534$, $\eta^2_{partial} = .00$; and no third order interaction effect, $F(1,77) = .04$, $p = .842$, $\eta^2_{partial} = .00$.

For perceived future suffering, we found a main effect of cause of suffering condition, $F(1, 77) = 42.77$, $p < .001$, $\eta^2_{partial} = .348$, showing lower perceived future suffering for the psychological trauma than for the physical trauma ($M_{PsyT} = 4.18$, $SE_{PsyT} = 0.14$; $M_{PhyT} = 5.05$, $SE_{PhysT} = 0.12$). There was no main effect of mental illness diagnosis, $F(1,77) = .49$, $p = .485$, $\eta^2_{partial} = .01$ ($M_{Diag} = 4.68$, $SE_{Diag} = 0.17$; $M_{NoDiag} = 4.55$, $SE_{NoDiag} = 0.17$); and no interaction effect between cause and diagnosis, $F(1,68) = .06$, $p = .807$, $\eta^2_{partial} = .00$. We found a main effect of order $F(1,77) = 13.56$, $p < .001$, $\eta^2_{partial} = .15$, in which ratings were higher when psychological trauma was presented first ($M_{PhyT1st} = 4.21$, $SE_{PhyT1st} = .16$; $M_{PsyT1st} = 5.03$, $SE_{PhyT1st} = .16$). We found no interaction effect between cause of suffering and order, $F(1,77) = .29$, $p = .594$, $\eta^2_{partial} = .00$; no interaction effect between mental illness diagnosis and order, $F(1,77) = .49$, $p = .485$, $\eta^2_{partial} = .01$; and no third order interaction effect, $F(1,77) = 1.88$, $p = .17$, $\eta^2_{partial} = .02$.

We found a main effect of cause of suffering on moral acceptance of euthanasia, in which euthanasia was less morally acceptable when the unbearable suffering was caused by a psychological trauma than to a physical trauma, $F(1,77) = 23.20$, $p < .001$, $\eta^2_{partial} = .23$ ($M_{PsyT} = 2.50$, $SE_{PsyT} = 0.21$; $M_{PhyT} = 3.18$, $SE_{PhysT} = 0.22$). We found no main effect of mental illness diagnosis $F(1,77) = .90$, $p = .346$, $\eta^2_{partial} = .01$ ($M_{Diag} = 3.02$, $SE_{Diag} = 0.28$; $M_{NoDiag} = 2.65$, $SE_{NoDiag} = 0.20$); and no interaction effect between cause of suffering and mental illness diagnosis $F(1,77) = .14$, $p = .710$, $\eta^2_{partial} = .00$. We found no main effect of order $F(1,77) = .77$, $p = .384$, $\eta^2_{partial} = .01$ ($M_{PhyT1st} = 2.69$, $SE_{PhyT1st} = .29$; $M_{P3.03syT1st} =$, $SE_{PhyT1st} = .29$). We found no interaction effect between cause of suffering and order, $F(1,77) = 2.22$, $p = .140$, $\eta^2_{partial} = .03$; no interaction effect between mental illness diagnosis and order, $F(1,77) = .59$, $p = .445$, $\eta^2_{partial} = .01$; and no third order interaction effect, $F(1,77) = .52$, $p = .471$, $\eta^2_{partial} = .01$.

We found a main effect of cause of suffering in perceived competence, $F(1,77) = 16.51$, $p < .001$, $\eta^2_{partial} = .18$, in which suffering resulting from a psychological trauma led to lower perceived competence than suffering resulting from a physical trauma ($M_{PsyT} = 3.75$, $SE_{PsyT} = 0.18$; $M_{PhyT} = 4.62$, $SE_{PhysT} = 0,16$). We found no main effect of mental illness diagnosis, $F(1,77) = .61$, $p = .436$, $\eta^2_{partial} = .01$ ($M_{Diag} = 4.26$, $SE_{Diag} = 0.17$; $M_{NoDiag} = 3.95$, $SE_{NoDiag} = 0.18$); and no interaction effect between cause of suffering and mental illness diagnosis, $F(1,77) = .39$, $p = .534$, $\eta^2_{partial} = .01$. We found no main effect of order $F(1,77) = .27$, $p = .609$, $\eta^2_{partial} = .01$ ($M_{PhyT1st} = 4.20$, $SE_{PhyT1st} = .27$; $M_{PsyT1st} = 4.00$, $SE_{PhyT1st} = .28$). We found an interaction effect between cause of suffering and order, $F(1,77) = 5.01$, $p = .027$, $\eta^2_{partial} =$

.07, in which the effect is stronger when mental illness is presented first (M_{PsyT} = 4.55, SE_{PsyT} = .28; M_{PhyT} = 3.45, SE_{PhysT} = .32) than when physical illness is presented first (M_{PsyT} = 4.36, SE_{PsyT} = .28; M_{PhyT} = 4.04, SE_{PhysT} = .32). We found no interaction effect between mental illness diagnosis and order, $F(1,77) = .43$, $p = .52$, $\eta^2_{partial} = .01$; and no third order interaction effect, $F(1,77) = 2.21$, $p = .141$, $\eta^2_{partial} = .03$.

Study 3

For each variable (state depression, trait depression, current suffering, future suffering moral acceptability, and competence) ratings were entered into a repeated measures ANOVA with Trauma Treatment (Treatment vs. No-Treatment) and order of presentation of cause condition as between-participants variables and cause of suffering (psychological trauma vs. physical trauma) as independent within-participants variable.

We found no main effect of cause of suffering in the state depression, $F(1,76) = .05$, $p = .818$, $\eta^2_{partial} = .00$ (M_{PsyT} = 6.63, SE_{PsyT} = 0.09; M_{PhyT} = 6.65, SE_{PhysT} = 0.08); no main effect of treatment, $F(1,76) = .21$, $p = .650$, $\eta^2_{partial} = .00$ (M_{Treat} = 6.66, SE_{Treat} = 0.09; $M_{NoTreat}$ = 6.61, $SE_{NoTreat}$ = 0.09); and no interaction effect between cause of suffering and treatment, $F(2,78) = 2.74$, $p = .102$, $\eta^2_{partial} = .04$. We found no order effect, $F(1,76) = 1.74$, $p = .191$, $\eta^2_{partial} = .02$ ($M_{PhyT1st}$ = 6.56, $SE_{PhyT1st}$ = .08; $M_{PsyT1st}$ = 6.72, $SE_{PhyT1st}$ = .09). We found no interaction effect between cause of suffering and order, $F(1,76) = .06$, $p = .803$, $\eta^2_{partial} = .00$; no interaction effect between trauma treatment and order, $F(1,76) = .08$, $p = .782$, $\eta^2_{partial} = .00$; and no third order interaction effect, $F(1,76) = .74$, $p = .392$, $\eta^2_{partial} = .01$.

For the trait depression, we found no main effect of cause of suffering, $F(1,76) = .51$, $p = .476$, $\eta^2_{partial} = .01$ (M_{PsyT} = 6.24, SE_{PsyT} = 0.12; M_{PhyT} = 6.13, SE_{PhysT} = 0.12); no main effect of treatment, $F(1,76) = .44$, $p = .511$, $\eta^2_{partial} = .01$ (M_{Treat} = 6.11, SE_{Treat} = 0.17; $M_{NoTreat}$ = 6.25, $SE_{NoTreat}$ = 0.17); but found an interaction effect between cause of suffering and treatment, $F(1,76) = 5.32$, $p = .024$, $\eta^2_{partial} = .07$. Pairwise comparisons showed that when the cause could be treated in 15 years, there were no differences between psychological and physical attribution ($p = .286$) regarding the depressive trait, but the no-treatment condition led to higher trait depression inferences for the psychological attribution ($p = .035$). That is, the mutability of the cause of suffering reduced dispositional attributions of depression for the condition of psychological trauma; and we found a tendency for an increase in trait Depression in the physical trauma condition. We found an order effect, $F(1,76) = 3.86$, $p = .053$, $\eta^2_{partial} = .05$, in which ratings were higher when psychological trauma was presented first ($M_{PhyT1st}$ = 6.00, $SE_{PhyT1st}$ = .13; $M_{PsyT1st}$ = 6.37, $SE_{PhyT1st}$ = .13). We found no interaction effect between cause of suffering and order, $F(1,76) = .93$, $p = .338$, $\eta^2_{partial} = .01$; no interaction effect between trauma treatment and order, $F(1,76) = .81$, $p = .371$, $\eta^2_{partial} = .01$; and no third order interaction effect, $F(1,76) = .39$, $p = .532$, $\eta^2_{partial} = .01$.

We found a main effect of cause of suffering on perceived current suffering, $F(1, 76) = 13.00$, $p = .001$, $\eta^2_{partial} = .15$, showing that psychological trauma led to lower current suffering than physical trauma ($M_{PsyT} = 5.55$, $SE_{PsyT} = 0.16$; $M_{PhyT} = 6.04$, $SE_{PhysT} = 0.13$). We found no main effect of treatment, $F(1, 76) = .00$, $p = .951$, $\eta^2_{partial} = .00$ ($M_{Treat} = 5.80$, $SE_{Treat} = 0.17$; $M_{NoTreat} = 5.79$, $SE_{NoTreat} = 0.17$); and no interaction effect between cause of suffering and treatment $F(1, 76) = .01$, $p = .923$, $\eta^2_{partial} = .00$. We found no order effect, $F(1,76) = 2.59$, $p = .112$, $\eta^2_{partial} = .03$ ($M_{PhyT1st} = 5.61$, $SE_{PhyT1st} = 16$; $M_{PsyT1st} = .5.98$, $SE_{PhyT1st} = .17$). We found no interaction effect between cause of suffering and order, $F(1,76) = .14$, $p = .713$, $\eta^2_{partial} = .00$; no interaction effect between trauma treatment and order, $F(1,76) = 1.60$, $p = .209$, $\eta^2_{partial} = .02$; and no third order interaction effect, $F(1,76) = .31$, $p = .581$, $\eta^2_{partial} = .00$.

For perceived future suffering, we found a main effect of cause of suffering, $F(1, 76) = 43.22$, $p < .001$, $\eta^2_{partial} = .36$, showing lower future suffering for the psychological trauma than for the physical trauma ($M_{PsyT} = 4.53$, $SE_{PsyT} = 0.17$; $M_{PhyT} = 5.54$, $SE_{PhysT} = 0.15$). There was no main effect of treatment, $F(1,76) = 2.33$, $p = .131$, $\eta^2_{partial} = .03$ ($M_{Treat} = 4.83$, $SE_{Treat} = 0.22$; $M_{NoTreat} = 5.24$, $SE_{NoTreat} = 0.19$); and no interaction effect between cause of suffering and treatment, $F(1,76) = .05$, $p = .826$, $\eta^2_{partial} = .00$. This result may indicate a strong belief that the trauma causing the suffering in past would not impact the suffering the future. In other words, it may reflect the belief that unbearable suffering is complex and depends on ongoing causes maintaining the suffering and not does not only depend on the trauma initial trauma that precipitated the suffering. We found no order effect, $F(1,76) = 2.92$, $p = .091$, $\eta^2_{partial} = .04$ ($M_{PhyT1st} = 4.81$, $SE_{PhyT1st} = .19$; $M_{PsyT1st} = 5.26$, $SE_{PhyT1st} = .19$). We found no interaction effect between cause of suffering and order, $F(1,76) = 1.90$, $p = .172$, $\eta^2_{partial} = .02$; no interaction effect between trauma treatment and order, $F(1,76) = .41$, $p = .522$, $\eta^2_{partial} = .01$; and no third order interaction effect, $F(1,76) = .17$, $p = .680$, $\eta^2_{partial} = .00$.

When comparing judgments of moral acceptance of the request for euthanasia, we found a main effect of cause of suffering, in which requests for euthanasia were considered less morally acceptable when the unbearable suffering was caused by a psychological trauma than by a physical trauma, $F(1,76) = 36.24$, $p < .001$, $\eta^2_{partial} = .32$ ($M_{PsyT} = 2.88$, $SE_{PsyT} = 0.23$; $M_{PhyT} = 4.11$, $SE_{PhysT} = 024$). We found no main effect of treatment $F(1,76) = .83$, $p = .365$, $\eta^2_{partial} = .01$ ($M_{Treat} = 3.30$, $SE_{Treat} = 0.33$; $M_{NoTreat} = 3.69$, $SE_{NoTreat} = 0.33$); and no interaction effect between cause of suffering and treatment $F(1,76) = .71$, $p = .404$, $\eta^2_{partial} = .01$. We found no order effect, $F(1,76) = 2.10$, $p = .152$, $\eta^2_{partial} = .03$ ($M_{PhyT1st} = 3.20$, $SE_{PhyT1st} = .29$; $M_{PsyT1st} = 3.80$, $SE_{PhyT1st} = .30$). We found no interaction effect between cause of suffering and order, $F(1,76) = .35$, $p = .555$, $\eta^2_{partial} = .01$; no interaction effect between trauma treatment and order, $F(1,76) = .43$, $p = .515$, $\eta^2_{partial} = .01$; and no third order interaction effect, $F(1,76) = 2.81$, $p = .098$, $\eta^2_{partial} = .04$.

We found a main effect of cause of suffering on perceived competence, $F(1,76) = 34.79$, $p < .001$, $\eta^2_{partial} = .31$, in which suffering caused by a psychological trauma led to lower competence than

suffering caused by a physical trauma (M_{PsyT} = 4.20, SE_{PsyT} = 0.23; M_{PhyT} = 4.19, SE_{PhysT} = 0.20). We found no main effect of treatment, $F(1,76) = .15$, $p = .696$, $\eta^2_{partial} = .00$ (M_{Treat} = 4.60, SE_{Treat} = 0.28; $M_{NoTreat}$ = 4.79, $SE_{NoTreat}$ = 0.28); and no interaction effect between causal cause and treatment, $F(1,76) = .27$, $p = .602$, $\eta^2_{partial} = .00$. We found an order effect, $F(1,76) = 6.12$, $p = .016$, $\eta^2_{partial} = .07$, in which ratings were higher when psychological trauma was presented first ($M_{PhyT1st}$ = 4.24, $SE_{PhyT1st}$ = .27; $M_{PsyT1st}$ = 5.19, $SE_{PhyT1st}$ = .27). We found no interaction effect between cause of suffering and order, $F(1,76) = .04$, $p = .835$, $\eta^2_{partial} = .00$; no interaction effect between trauma treatment and order, $F(1,76) = 2.22$, $p = .140$, $\eta^2_{partial} = .03$; and no third order interaction effect, $F(1,76) = .06$, $p = .812$, $\eta^2_{partial} = .00$.

Study 4

For each variable (state depression, trait depression, current suffering, future suffering moral acceptability, and competence) ratings were entered into a repeated measures ANOVA with Suffering Treatment (Treatment vs. No-Treatment) and order of presentation of cause condition as between-participants variables and cause of suffering (psychological trauma vs. physical trauma) as independent within-participants variable.

We found no main effect of cause of suffering on the state depression, $F(1,76) = 1.53$, $p = .221$, $\eta^2_{partial} = .02$ (M_{PsyT} = 6.53, SE_{PsyT} = 0.09; M_{PhyT} = 6.65, SE_{PhysT} = 0.09); nor a main effect of treatment on state depression, $F(1,76) = .03$, $p = .854$, $\eta^2_{partial} = .00$ (M_{Treat} = 6.60, SE_{Treat} = 0.10; $M_{NoTreat}$ = 6.58, $SE_{NoTreat}$ = 0.10); and no interaction effect between cause of suffering and treatment, $F(1,78) = .06$, $p = .806$, $\eta^2_{partial} = .001$. We found no order effect, $F(1,76) = 1.23$, $p = .272$, $\eta^2_{partial} = .02$ ($M_{PhyT1st}$ = 6.66, $SE_{PhyT1st}$ = .10; $M_{PsyT1st}$ = 6.51, $SE_{PhyT1st}$ = .10). We found no interaction effect between cause of suffering and order, $F(1,76) = .24$, $p = .623$, $\eta^2_{partial} = .00$; no interaction effect between suffering treatment and order, $F(1,76) = .14$, $p = .71$, $\eta^2_{partial} = .00$; and no third order interaction effect, $F(1,76) = .24$, $p = .62$, $\eta^2_{partial} = .00$.

For the trait depression, we found no main effect of cause of suffering, $F(1,76) = 1.86$, $p = .177$, $\eta^2_{partial} = .02$ (M_{PsyT} = 6.19, SE_{PsyT} = 0.11; M_{PhyT} = 6.33, SE_{PhysT} = 0.11); no main effect of treatment, $F(1,76) = .04$, $p = .837$, $\eta^2_{partial} = .00$ (M_{Treat} = 6.28, SE_{Treat} = 0.13; $M_{NoTreat}$ = 6.24, $SE_{NoTreat}$ = 0.13); and no interaction effect between cause of suffering and treatment, $F(1,76) = .02$, $p = .902$, $\eta^2_{partial} = .00$. We found no order effect, $F(1,76) = .00$, $p = .945$, $\eta^2_{partial} = .00$. ($M_{PhyT1st}$ = 6.25, $SE_{PhyT1st}$ = .13; $M_{PsyT1st}$ = 6.26, $SE_{PhyT1st}$ = .13). We found no interaction effect between cause of suffering and order, $F(1,76) = 1.86$, $p = .18$, $\eta^2_{partial} = .02$; no interaction effect between suffering treatment and order, $F(1,76) = .23$, $p = .632$, $\eta^2_{partial} = .00$; and no third order interaction effect, $F(1,76) = 2.60$, $p = .111$, $\eta^2_{partial} = .03$.

We found a main effect of cause of suffering on perceived current suffering, $F(1, 76) = 19.33$, $p < .001$, $\eta^2_{partial} = .20$, showing higher current suffering for the physical trauma condition than for the

psychological trauma condition (M_{PsyT} = 5.54, SE_{PsyT} = 0.16; M_{PhyT} = 5.59, SE_{PhysT} = 0.15). We found no main effect of treatment, F(1, 76) = .58, p = .450, $\eta^2_{partial}$ = .01 (M_{Treat} = 5.69, SE_{Treat} = 0.16; $M_{NoTreat}$ = 5.84, $SE_{NoTreat}$ = 0.16); and no interaction effect between cause of suffering and treatment F(1, 76) = .06, p = .808, $\eta^2_{partial}$ = .00. We found no order effect, F(1,76) = .26, p = .614, $\eta^2_{partial}$ = .00 ($M_{PhyT1st}$ = 5.81, $SE_{PhyT1st}$ = 14; $M_{PsyT1st}$ = 5.71, $SE_{PhyT1st}$ = .14). We found no interaction effect between cause of suffering and order, F(1,76) = 1.49, p = .226, $\eta^2_{partial}$ = .02; no interaction effect between suffering treatment and order, F(1,76) = .01, p = .900 , $\eta^2_{partial}$ = .00 ; and no third order interaction effect, F(1,76) = .954, p = .332, $\eta^2_{partial}$ = .012.

We found a main effect of cause of suffering on perceived future suffering, F(1, 76) = 50.35, p < .001, $\eta^2_{partial}$ = .40, showing lower future suffering for the psychological trauma condition than for the physical trauma condition (M_{PsyT} = 4.56, SE_{PsyT} = 0.21; M_{PhyT} = 4.55, SE_{PhysT} = 0.20). We also found a main effect of treatment, F(1, 76) = 3.92, p = .051, $\eta^2_{partial}$ = .05, showing that ratings of future suffering are higher in the No-treatment condition than in the treatment condition (M_{Treat} = 4.80, SE_{Treat} = 0.18; $M_{NoTreat}$ = 5.31, $SE_{NoTreat}$ = 0.18). This result suggests that our manipulation of suffering treatment was successful. We found no interaction effect between cause of suffering and treatment F(1, 76) = 1.82, p = .182, $\eta^2_{partial}$ = .02. Despite the lack of a significant interaction effect, given our hypotheses, pairwise comparisons were performed. Despite the lack of a significant interaction effect, given our hypotheses, pairwise comparisons were performed. These showed that for the physical trauma condition, knowing that suffering would be treated in the future led to lower future suffering than no-treatment condition (p = .017); for the psychological trauma condition no differences were found between the treatment and no-treatment conditions (p = .277). We found no order effect, F(1,76) = .28, p = .597, $\eta^2_{partial}$ = .00. ($M_{PhyT1st}$ = 4.99, $SE_{PhyT1st}$ = .18; $M_{PsyT1st}$ = 5.13, $SE_{PhyT1st}$ = .18). We found no interaction effect between cause of suffering and order, F(1,76) = 1.36, p = .247, $\eta^2_{partial}$ = .02; no interaction effect between suffering treatment and order, F(1,76) = .39, p = .532, $\eta^2_{partial}$ = .01; and no third order interaction effect, F(1,76) = .20, p = .655, $\eta^2_{partial}$ = .00.

When comparing judgments of moral acceptance of the request for euthanasia, we found a main effect of cause of suffering, in which requests for euthanasia were considered less morally acceptable when the unbearable suffering was caused by a psychological trauma then to a physical trauma, F(1,76) = 61.94, p < .001, $\eta^2_{partial}$ = .45 (M_{PsyT} = 2.74, SE_{PsyT} = 0.21; M_{PhyT} = 4.00, SE_{PhysT} = 0.23). We found no main effect of treatment F(1,76) = 2.13, p = .149, $\eta^2_{partial}$ = .03 (M_{Treat} = 3.06, SE_{Treat} = 0.30; $M_{NoTreat}$ = 3.68, $SE_{NoTreat}$ = 0.30); but we found an interaction effect between cause of suffering and treatment, F(1,76) = 5.84, p = .018, $\eta^2_{partial}$ = .07. Pairwise comparisons showed that suffering treatment led to lower acceptance of euthanasia than no treatment of suffering when suffering was caused by a physical trauma (p = .035), but did not reduce euthanasia acceptance when suffering was caused by a psychological trauma (p = .600). We found no order effect, F(1,76) = .32, p = .573, $\eta^2_{partial}$ = .00 ($M_{PhyT1st}$

= 3.25, $SE_{PhyT1st}$ = .30; $M_{PsyT1st}$ = .3.49, $SE_{PhyT1st}$ = .30). We found no interaction effect between cause of suffering and order, $F(1,76) = 2.68$, $p = .106$, $\eta^2_{partial} = .03$; no interaction effect between suffering treatment and order, $F(1,76) = .39$, $p = .534$, $\eta^2_{partial} = .01$; and no third order interaction effect, $F(1,76) = .74$, $p = .394$, $\eta^2_{partial} = .01$.

We found a main effect of cause of suffering in perceived competence, $F(1,76) = 13.42$, $p < .001$, $\eta^2_{partial} = .15$, in which explaining the suffering with a psychological trauma led to lower judged competence than explaining the suffering with a physical trauma ($M_{PsyT} = 4.31$, $SE_{PsyT} = 0.22$; $M_{PhyT} = 5.03$, $SE_{PhysT} = 0.20$) . We also found a main effect of treatment, $F(1,76) = 6.25$, $p = .015$, $\eta^2_{partial} = .08$, indicating lower perceived competence when future treatment of suffering is possible ($M_{Treat} = 4.20$, $SE_{Treat} = 0.27$; $M_{NoTreat} = 5.14$, $SE_{NoTreat} = 0.27$). No interaction effect between cause of suffering and treatment was found, $F(1,76) = .10$, $p = .749$, $\eta^2_{partial} = .00$. We found no order effect, $F(1,76) = 1.89$, $p = .18$, $\eta^2_{partial} = .02$ ($M_{PhyT1st} = 4.41$, $SE_{PhyT1st} = .27$; $M_{PsyT1st} = .4.93$, $SE_{PhyT1st} = .27$). We found no interaction effect between cause of suffering and order, $F(1,76) = .00$, $p = .949$, $\eta^2_{partial} = .00$; no interaction effect between suffering treatment and order, $F(1,76) = .49$, $p = .486$, $\eta^2_{partial} = .01$; and no third order interaction effect, $F(1,76) = .00$, $p = .949$, $\eta^2_{partial} = .00$.