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Individualizing Psychotherapy Research Designs

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Abstract

The present paper discusses perspectives on how psychotherapy research may move towards individualizing its designs, in the context of a post-modern definition of pluralism of approaches. Based on the overarching purposes of psychotherapy research, I discuss the role of case formulation as a central tool for increasing clinical utility and precision of research conclusions. A historic account of the use of case formulation in research is completed by an updated empirical account on what we know on the effects, the validation and the components of effective case formulations in psychotherapy, and the articulation of specific research perspectives. The use of case formulation in the study of treatment moderators and mechanisms is illustrated with specific studies. The use of individualized stimuli in experimental designs is developed and illustrated in terms of increased precision and clinical utility. The relevance of individualizing research designs is discussed in the context of psychotherapy integration.

Key-Words: Individualizing; Designs; Case Formulation; Research; Psychotherapy Integration

In the present paper, I put forward perspectives of how researchers may individualize psychotherapy research designs and discuss the role of case formulation in this process. I then develop assessment strategies taking into account the idiographic nature of subjective experience of clients in psychotherapy research trials and their implications for psychotherapy integration.

Why Individualizing?

Psychotherapy research, and its progresses over the past half a century, may fundamentally be understood as a translational discipline, aiming at bridging science and practice. As an applied science, it is at the crossroads of several disciplines and may help close the gap between basic research and clinical practice, by its focus on the effects and mechanisms of psychologically founded interventions (Goldfried, 2010; Kazdin, 2008). The translational nature of psychotherapy research goes both ways (Kramer, 2017, 2018; Schnell & Herpertz, 2018; Sharp & Kalkpakci, 2015). Firstly, it implies a movement from clinical practice, i.e., an intervention a therapist implements with a particular client and his/her response to it, to basic science, i.e., testing the individual's emotional reaction in the laboratory to a set of stimuli within a controlled paradigm and observing differences as a function of the independent variable. In this first movement, a clinical phenomenon (e.g., self-harming behaviors in borderline personality disorder) may be the object of study and the understanding of its generic emotional underpinnings may be enhanced with controlled laboratory research. Psychotherapy research offers here a possible theoretical framework of how to interpret the findings from the experimental research. Secondly, translation implies the movement from basic science (e.g., observing the frequency of certain types of interaction in a laboratory study), to clinical practice (e.g., use of interpersonal interpretations in the psychotherapy session). In this second movement, a generic observation (e.g., the expression of hostility in an interaction) may be

understood as marker for a certain type of psychotherapeutic intervention (e.g,, meta-communication). Psychotherapy research offers here the possibility of elucidating the steps, or the mechanisms, of how hostility may be transformed into a more constructive interaction style.

In this process, construction of a theory of psychological change brought about in psychotherapy may be understood as a core task of psychotherapy research, with the important note that there are multiple theories – as systematic explanatory frameworks of observations – being developed in parallel, a state of affair which may be described as “post-modern” (Safran & Messer, 1997). Despite this plurality of organized ideas, the process of theory building may follow only a few principles across the theories developed in psychotherapy and psychotherapy research. Stiles (2009) discusses two classical principles: firstly, hypothesis-testing which typically involves hypothetico-deductive reasoning on part of the researcher; secondly, induction processes which typically involve developing inferences based on observations. Finally, Stiles (2009) adds the abducting reasoning as a third logical operation on theories where observations permeate, and change from the interior, the theory.

Whereas the aims formulated above on psychotherapy research as a means to bridge science and practice are meaningful, the reality is not always a neat and peaceful process. Topics discussed in particularly conflictual ways are a limited clinical utility of certain psychotherapy research results for practice, a lack of specification and conceptual precision in certain results from psychotherapy research, and a difficulty for the practitioner to be able to make sense of generic conclusions based on results gained under highly controlled – and somewhat “unnatural” – conditions, i.e., in the context of randomized controlled trials (Basseches, 2015; Carey & Stiles, 2016).

Along this line, already in 1991, J. Persons argued that psychotherapy (outcome) research does not study the treatments as described in the clinical literature, but it studies a more "artificial" set of treatments, under controlled conditions and thus fails to be useful for the practicing clinician and fails to address the question of which mechanism is central in a specific treatment. Psychotherapy research designs – or research paradigms – based on individualized case formulations, Persons (1991) argued further, are a possible way to increase the clinical utility of the research results in this domain, and thus to bridge the gap between science and practice. The use of an individualized understanding of the client's situation (i.e., problems, resources, relationships) guarantees the vital link between research and practice.

There were several comments to this thought-provoking statement. Messer (1991), while agreeing with most of the tenets formulated by Persons, pointed out several obstacles standing in the way of using such idiographic research designs and insisted on issues related to reliability and validity in psychodynamic case formulations. Schacht (1991) agreed with most of the arguments Persons laid out and specified that there are at least two different types of case formulation: firstly, a hermeneutically-rooted formulation which is concerned with consistency on the level of the metaphoric contents used, and secondly, an empirically-rooted formulation which is concerned with detailed observation. He argues that case formulations (and training therein) need to fit the therapist's personality, personal style and preference, rather than be imposed on him or her. Schacht (1991) explained certain surprising results in psychotherapy research when training might have been incompatible with the actual therapists delivering the treatment (Henry, Strupp, Butler, Schacht, & Binder, 1991).

Garfield (1991) disagreed more clearly with the points made by Persons: he argued that only a few psychotherapy research studies actually used standardized procedures and thus the

scope of the argument was limited; he also drew attention to the limitations of carrying out idiographic psychotherapy research, for example, by discussing the difficulty of reproducing results in independent settings. He argued that while a theory-based approach to psychotherapy research might be interesting, an empirical approach might even be more relevant; that is, observing what therapists *actually do* in session, rather than rely on what they *say* they do (see also Ablon & Jones, 1998). Consistently, Silverman's (1991) response to Persons also drew attention to the fact that there may be no such a thing as "standardized" treatment; as soon as psychotherapy is delivered, the therapist tailors the treatment somewhat to the client. This latter observation continues to represent a real challenge for research on case formulation today, in particular for selecting comparison conditions.

Since the early 1990s, case formulation has enjoyed a double recognition as means to bridge science and practice, while at the same time remaining a still marginal tool in psychotherapy research. A first recognition in the literature was the generic use of case formulation (Eells, 2007, for a discussion, see Eells, 2013a/b, and Persons, 2013). Case formulation methodology is useful in a similar way for any type of disorder and client presentation. A second very recent recognition focuses on a disorder-oriented approach to case formulation, in particular for clients with personality disorders (Kramer, 2019). Constraints to case formulation methodology and practice stem from the psychopathological features of the client presentation.

What is Case formulation? A Post-Modern Definition

Case formulation may be defined as "a hypothesis about the causes, precipitants, and maintaining influences of a person's psychological, interpersonal, and behavioral problems" (Eells, 2007, p. 4). Adopting a disorder-oriented perspective, it may be defined as "a set of

idiosyncratic hypotheses, explaining observations through the lenses of both clinical theory and relevant knowledge bases, with the aiming of understanding a particular client" (Kramer, 2019, p. 3). The process of explaining observed behaviors and subjective experiences refers to the process of symbolizing – the construction of meaning (Stiles, 2017) – within the context of a significant therapeutic relationship (Wiseman, 2017). As such, the observed behaviors and experiences (the component to be explained) may be similar across individuals, but the underlying meaning (the explaining component) may vary from one individual to the next. As such, case formulation is at the core of explaining inter-individual differences, going beyond observing and noticing them. Theory plays a crucial role in this process; it is both the groundwork for the development of specific hypotheses as part of a case formulation, and the resulting explanation – the theory possibly gets enriched, amended and changed by the process of case formulation. The centrality of theory in the process of case formulation relates to two core features of post-modern positioning of case formulation methodology. Firstly, theories are multiple and need to be chosen by a scientist-practitioner with great care. Secondly, theories have tenets and components which may be tested by empirical research; knowledge bases gained from nomothetic research are the lenses through which the case formulation acts. As such, case formulation is a post-modern practice of psychological and psychotherapeutic understanding and intervention (Caspar, 2000; Ingram, 2016; Johnstone & Dallos, 2013; Macneil, Hasty, Conus, & Berk, 2012; Sturmey, 2009), representing a tool for practice-based evidence and helping to personalize psychotherapy in a variety of ways.

For the practicing clinician, a case formulation may serve as compass to plan treatment, help select a specific intervention and tailor relationship offer to the particular client. It may inform the clinician of what to do when and with what type of client; as such, it may be of help

in critical situations where evidence-based treatments, by their generic formulations and recommendations, are unable to reach in and assist decision-making and real-time effective intervention. As such, case formulation becomes one of the tools for implementing deliberate practice in psychotherapy. As outlined by Rousmaniere (2017), the therapist's formulation of a clinical situation may be one of the entrance points where therapeutic expertise may be deliberately fostered in training contexts. Case conceptualization may be a therapist activity, which may help the development of expertise in psychotherapy (Chi, 2006; Dudley, Ingham, Sowerby, & Freeston, 2015; Vollmer, Spada, Caspar, & Burri, 2013).

As outlined by Eells (2013a) in his reformulation of Person's case formulation hypothesis, there is a feedback loop incorporated in case formulation methodology: the formulation contains predictions about the client's behavior and experience which will then become the focus of monitoring and systematic observation by the therapist (and the client). Changes on these variables will then be fed back into the case formulation. Eells (2013a) makes the case for case formulation being part of effectiveness and dissemination research, whereas the controlled paradigms (i.e., randomized controlled trials) respond to the goals of efficacy studies. As such, the case formulation approach has the potential to bridge the debate between researchers focusing on technical components of psychotherapy and researchers focusing on the therapeutic relationship (Eells, 2013a). These arguments lead this author to formulate an updated version of the case formulation hypothesis: "Evidence-based, case formulation-guided psychotherapy ought to equal or exceed outcomes generated by empirically supported, manualized therapies, all else being equal." (Eells, 2013a, p. 436). A hypothesis to be tested.

Case Formulation in Psychotherapy Research: An Update

Are case formulations valid and reliable? Addressing the questions of validity and reliability of case formulations raised by Messer (1991), Barber and Crits-Christoph (1993) reviewed construct validity of psychodynamically informed case formulation methods. They concluded that central maladaptive interpersonal patterns may reliably be assessed across case formulation methods, including the Core Conflictual Relationship Theme and the Idiographic Conflict Formulation Method. From a cognitive-behavioral perspective, the question of construct validity of case formulation was empirically studied by Mumma and Mooney (2007; Haynes, Mumma, & Pinson, 2009; Haynes, Smith & Hunsley, 2011). Using dynamic factor analysis applied to a single case with depression and generalized anxiety disorder, Mumma et al. (2007) compared two independently gathered case formulations of the same case (one by an expert clinician, one by a novice clinician). The methodology consisted of comparing the contents of the case formulations: the results showed differing idiosyncratic cognitive schemas, but enabled to demonstrate convergent and discriminant validity of the formulations, as well as their dynamic structure. Also, the expert clinician's formulation explained more variance of the client's distress than the novice clinician's formulation. Despite these strong advances in the validity and reliability of case formulation methodology, critical voices emerged (Bieling & Kuyken, 2003; Ridley, Jeffrey, Robertson, 2017): in essence, their criticism addressed the validity and reliability issues in particular of cognitive case formulation methodology. The diversity in case formulation methodologies, here described as post-modern feature of an integrative science of case formulation, may also be interpreted as a weakness of a field incapable to reach a consensus (Ridley et al., 2017). In addition, the authors suggest that clinicians, if their complex methodologies require high levels of inference (rather than simple heuristics), are prone to a number of cognitive biases in their case formulations.

Are there differences in the quality of case formulations as a function of therapist expertise? A controlled study by Eells, Lombart, Kendjelic, Turner and Lucas (2005) compared case formulations made by *N* = 65 therapists (experts, experienced and novice) on a number of parameters. Detailed transcripts of the formulations were established – as responses to standardized and typical clinical vignettes – and rated by independent judges. The results showed that experts, compared to experienced and novice therapists, provided more comprehensive, elaborated, complex and systematic case formulations, but the three groups of therapists did not perform differently in terms of precision and content coherence of the formulations. The therapeutic obedience (cognitive-behavioral vs psychodynamic) only marginally affected the results, but differences in quality ranged between medium and large. This is an important study enabling to conclude which aspects of quality are related with expertise in psychotherapy, and help develop a focus in a formulation-focused psychotherapy training. Also focusing on the quality of the case formulations and its link with treatment planning in psychotherapy, Dudley, Ingham, Sowerby and Freeston (2015) examined two sets of samples (in total *N* = 87 cognitive-behavioral novice and experts therapists). The results indicated that all therapists relied on case formulation to make effective choices for treatment orientation and planning. Expert therapists, if asked to formulate their cases, had formulations that were more parsimonious, had more internal consistency and which were less erroneous, when compared with the novice therapists' formulations. This study adds more details about which quality aspects are most associated with expertise in psychotherapy, by focusing on the individualized case formulations.

A recent study looked at the impact of therapist competence (and expertise) in performing cognitive case formulations on outcome in cognitive-behavioral treatments for depression (Easden & Fletcher, 2018). Multi-level analyses were conducted on a sample of *N* =

28 clients (undergoing cognitive-behavioral therapy) with a total of 225 video analyses being conducted on the in-session competencies of their therapists. The results showed that 40% of the within client variance, along with 19% of the between client variance of the outcome (i.e., BDI change), were explained by the therapist competence in using case formulations. Training therapists in achieving complex, but parsimonious, case formulations may become a key component of psychotherapy training. Of note, expertise in psychotherapy is a complex topic, as it is not the same to be an expert *about* psychotherapy and to be an expert actually *performing* psychotherapy (Norcross, & Karpiak, 2017).

So far, a few studies have demonstrated an impact of case formulation on outcome in different psychological disorders (Aston, 2009; Eells, 2013a). In a study on $N = 120$ clients with different types of phobia, Schulte, Künzel, Pepping and Schulte-Bahrenberg (1992) compared, in a randomized design, manualized behavior therapy with an individualized case formulation based treatment. The results showed that at termination, the manualized treatment outperformed the individualized, but that these effects were equalized between the conditions at follow-up measurement. As predicted by Persons (1991), the researchers noted that the therapists in the manualized treatment arm used some kind of "adaptation" or individualization, despite the research protocol. This study suggested that formulating a case may be a fundamentally human activity, rooted in the human's need for symbolizing experience (Kramer, 2019), and that for specific disorders, like phobias, the use of behaviorally oriented manuals is most productive, and highly individualized procedures might not always be necessary to yield optimal short-term effects. Similar conclusions may be drawn from a smaller-scale randomized controlled trial (Emmelkamp, Bouman, & Blaauw, 1994) for $N = 23$ clients with obsessive-compulsive disorder undergoing behavior therapy. A standard protocol was compared to a treatment based on

problem analysis. Both treatments did equally well and it must be noted that, in reality, any standard behavior therapy may benefit from some kind of problem analysis. These results raise questions about the feasibility of individualization as a research strategy. As sketched out by Silverman (1991), can a psychotherapy be anything else but individualized?

In the context of child psychotherapy, researchers compared manualized intervention programs with modular, particularly client-matched intervention programs for children with anxiety, depression or conduct problems (Chorpita, Weisz, Daleiden, Schoenwald, Palinkas, Miranda, Higa-McMillan, Nakamura, Austin, Borntrager, Ward, Wells, Gibbons, and the Research Network on Youth Mental Health, 2013). In a randomized effectiveness trial on N = 174 youths aged 7 to 13, this study yielded significantly better results in the main outcome domains for the boys and girls who received the modular ("matched") intervention program (Chorpita et al., 2013) than the standard counterparts.

Several studies used a formulation-based approach, but did not formally compare the effects of a formulation-based with those of a standard treatment. For example, Persons, Roberts, Zalecki and Brechwald (2006) showed for N = 58 clients with depression, anxiety and, for some, personality disorders, that their pre-post effect sizes were comparable to effect sizes found in controlled samples with similar intake problems; this observation was also true for improvement and recovery rates in these samples.

Within the context of a randomized controlled trial, Ghaderi (2006) examined the effects of an individualized treatment for bulimia nervosa, compared with a manual-based standardized treatment for N = 50 clients. The researchers observed that both groups improved on a variety of outcome measures, to a similar extent, except for specific outcome measures (i.e., eating concerns, bulimic episodes, and body shape satisfaction) for which an advantage was found

favoring the individualized condition. Response to treatment was significantly higher in the individualized condition, compared to the standardized condition. It needs to be noted that the assessments mostly relied on self-reports (except for the bulimic episodes which were reported in a standardized clinical interview) and that the effects were in the moderate range. Nevertheless, we can conclude that this study is one of the first demonstrating small to moderate advantages of individualizing psychotherapy using case formulation.

In our own study on borderline personality disorder (Kramer, Kolly, Berthoud, Keller, Preisig, Caspar et al., 2014), we randomized $N = 85$ clients, in an add-on design, to two brief versions of a psychiatric treatment, a standard treatment and an individualized treatment where the therapists used an idiographic case formulation according to Plan Analysis methodology and where they implemented the motive-oriented therapeutic relationship (Caspar, 2007). Results showed that clients in both conditions, on average, experienced symptom reduction. We also found small to moderate outcome advantages for general problem load favoring the individualized treatment. Excellent adherence was demonstrated for both treatment methods in both conditions. Between-conditions effects vanished in a smaller-scale follow-up study, until 1 year after the end of the brief treatment (Kramer, Stulz, Berthoud, Caspar, Marquet, Kolly, et al., 2017). In order to gain insight into the underlying mechanisms of change, we micro-analyzed three sessions per client in a sub-sample of $N = 57$ clients from the larger trial (Kramer, Keller, Caspar, de Roten, Despland, & Kolly, 2017). We showed that the increase in coping quality (i.e., decrease in the frequency of behavioral coping) between sessions 1 and 5 mediated the subsequently observed symptom decrease between sessions 5 and 10 in the individualized condition. Of note, the add-on design (adding the Plan Analysis in one condition) provided a neat distinction between the standard treatment – which to some extent was individualized, as any

intervention may be (see the results of the adherence checks, Kramer et al., 2014) – and the explicitly individualized treatment. We concluded that idiographic case formulation is not incompatible with rigorous experimental designs; on the contrary, a well thought-through design can yield results contributing to the understanding of the impact a case formulation may have on the process and outcome of psychotherapy. Critically, our study aimed at the assessment of the added-value of a case formulation, but it did not explore the subjective experience a client and a therapist have in the process of therapy, which may be closer to where the actual change takes place in psychotherapy.

The latter was done in a qualitative study conducted by Pain, Chadwick and Abba (2008) on a specific type of cognitive-behavioral case formulation method for psychotic disorders. In this treatment, the therapists shared their case formulation with the clients, and the clients and the therapists were then interviewed by the researchers. Whereas the clients' reactions was multi-faceted, including positive and negative reactions to the discussion of the case formulation, the therapists reported that the formulation was mostly helpful to their sense of effectiveness in therapy and increased the quality of their understanding of the client's experience and problems. This study points to the necessity of careful discussion of case formulation contents with the clients. Whereas it makes sense that the therapists seemed to benefit from the case formulation, it may also make sense that certain contents of the formulation may be difficult to understand, or to emotionally bear, for certain clients (Pain et al., 2008).

Challenges Ahead

Challenges laying ahead the science of case formulation are numerous. Table 1 summarizes eight possible avenues psychotherapy researchers interested in case formulation may engage in. It gives examples of primary studies, or synthetic accounts related with selected case

formulation methodologies. More details on the case formulation methodologies referred to in the table may be found in the Kramer (2019) volume. In what follows, I will concentrate on point 8, on the use of case formulation in the study of moderators and mechanisms of change in psychotherapy research. By doing so, I will use examples from my own research on borderline personality disorder.

The Study of Individualized Moderators and Predictors. Identifying central moderators of change is an important task of psychotherapy research. It contributes to the understanding of when an observed effect holds true, or which treatment will work for whom and under which conditions (Kraemer, Wilson, Fairburn, & Agras, 2002; Kramer, 2017; Zilcha-Mano, 2018). For example, such research may discriminate between clients with high levels of psychological mindedness – or insight – from clients with low levels of psychological mindedness in explaining the treatment outcome (e.g., Johannson, Hoglend, Ulberg, Amlo, Marble Bogwald et al., 2010). I would argue that the clinical utility and precision of this conclusion are somewhat limited, because the variable of interest is considered quite generally and from an evaluative viewpoint (Stiles, 2013), thus ignoring the actual client's central experience, but also assuming that this variable of psychological mindedness is relevant for all individuals in the sample (which may not necessarily be the case). Whereas the evaluative part – meaning here the level of psychological mindedness – is included in such a study, the idiosyncratic components – categorical descriptors or specifications of how psychological mindedness plays out in the life of a particular person – are not. Case formulation as basis of an individualized moderator or predictor variable may help here. Case formulation may be applied to the clinical material included in this type of research, which helps emerge new dimensions and descriptors of a phenomenon. If a corresponding type of conclusion is envisaged based on

deductive reasoning, a supplementary step should transform the idiographic data into the nomothetic framework and thus make this data available to standardized hypothesis testing.

An example of such a study was conducted by Zufferey, Caspar and Kramer (in press). This study is a secondary analysis of the Kramer, Kolly et al. (2014) randomized controlled trial. We wanted to know whether the clients' agreeableness, as observed at session 1, had an impact on outcome after the brief treatment. We assumed that for the standard treatment this was the case, in the sense that the more agreeable the client was, the more symptom reduction he/she experienced. Consistent with writings on therapist responsiveness (Stiles, Honos-Webb, & Surko, 1998), we assumed that this effect was washed out in the individualized treatment arm where the therapists used a case formulation to responsively intervene on a relationship level (using the motive-oriented therapeutic relationship). The study included $N = 60$ clients with borderline personality disorder and confirmed the hypotheses as outlined. The particularly interesting part of the study is the operationalization of clients' agreeableness. In order to do this, we performed individualized case formulations, based on the material of the first sessions (video or audio recorded), using the Plan Analysis approach (Caspar, 2007). This methodology aims to explain the instrumental links between the observed behaviors or experiences and the underlying Plans and motives. A detailed Plan structure is depicted – in our study done independently by both researchers and therapists – and should help the therapist in treatment planning and in particular in implementing the motive-oriented therapeutic relationship, as was done in one of the treatment conditions in the parent study. Each of these individualized Plan structures encompasses a variable number of Plans, typically between 20 and 25. The study by Zufferey et al. assessed all the Plans in the 60 Plan structures in terms of their interactional agreeableness (thus defining the Plan Analysis – Agreeableness Scale, PA-AS). Plans like "Show yourself as

collaborative", or like "Be accommodating" received a high mark on the PA-AS (levels 7 and 6 respectively), whereas Plans like "Show yourself as difficult" or "Attack the others before they attack you" received a low mark on the PA-AS (levels 2 and 1 respectively). A mean score (along with standard deviation) for each client was computed (ranging between 1 and 7) which then entered the predictor analysis. A validation analysis was carried out as part of the study, using additional nomothetic assessments consistent with the interpersonal circumplex, which yielded satisfactory coefficients (Zufferey et al., in press).

This detailed assessment of agreeableness ensured that all the clinical information observed in the first session was taken into account from an idiosyncratic perspective, and in the assessment of the interactional agreeableness, no individual client-related information was lost. It is unclear whether traditional rating scales or self-report questionnaires of agreeableness are able to capture the singular nature of each of the 60 clients in this sample in terms of their real interactional agreeableness. It may be interesting to confront the case-formulation based assessment with the standard assessment of the same construct, here agreeableness. In sum, clinically relevant moderator or predictor variables may be gained from such qualitatively rooted research.

The Study of Individualized Mechanisms of Change. Idiographic formulations may also help track a specific central process throughout therapy, which may function as the idiosyncratic mechanism of change in a particular client undergoing treatment. Longitudinal observations based on an idiographic feature may require a combination between qualitative and quantitative methodologies. For example, rigorous time-series methodologies may be applied (e.g., Boswell, Anderson, & Barlow, 2014; DeRubeis, Cohen, Forand, Fournier, Gelfand & Lorenzo-Luaces, 2014; Fisher & Boswell, 2016; Ramseyer, Kupper, Caspar, Znoj, & Tschacher,

2014). Also, case study research may move towards the incorporation of explaining why change has occurred (Fishman, Messer, Edwards, & Dattilio, 2017; Stiles, 2001; Tishby & Wiseman, 2018).

An example from our own research was a study realized within the framework of the assimilation model (Stiles, 2001; Kramer, Meystre, Imesch, & Kolly, 2016), on a case with borderline personality disorder. This case of Louise was included in both Kramer et al. (2014), as well as in Zufferey et al.'s studies. The theory-building case study aimed at understanding change processes in a client marked with great internal conflictuality, as found in her Plan structure, as a possible indicator of internal multiplicity. In order to be able to track over time Louise's different internal parts – or experiences, or "voices" – we used intensive assimilation analysis. Without describing here the details of the methodology (see Stiles, 2001), it appeared that Louise's transcripts presented with a host of different experiences, many of them contradictory. As such, at times, she presented as particularly angry and wanting to be independent of her husband; at other times, she presented as a particularly enmeshed and dependent person who may want to care for others and be connected with them. Also, "voices" related with a self-presentation as "mad" or "losing control" are part of Louise's internal multiplicity, as well as the experience of being a victim, and being psychologically abused. The intensive analysis of the transcripts of the 10 sessions with Louise showed a dynamic evolution of the relationship the voices had with each other. We observed in the first few sessions a quite chaotic pattern where each voice is trying to take center stage, and struggling to be fully recognized, followed by a second part of the therapeutic process, after session 6 into the therapy, where a dialogue between two central voices – the angry and the enmeshed ones – is structuring the experience of Louise's Self. We interpreted this progression as Louise's capacity, linked to

the therapeutic process, to use the internal multiplicity as resource in the second part of the therapy, as opposed to the initial part of the therapy, where the internal multiplicity was hindering Louise's progress in therapy.

The intensive analysis of the internal multiplicity using the framework of the assimilation model was particularly productive. Without the combination of (a) qualitative and experientially thick information (i.e., by letting emerge the specific "voices", their contents and idiographic ways of being together), with (b) the systematic translation of such data into a meaningful framework of change (i.e., by using the 8-level anchored assimilation of problematic experiences scale and the depiction of the evolution of each of the voice's frequency over the course of therapy), the results may not have been so powerful. Even though assimilation analysis is not necessarily a case formulation method, it fulfills the same function in the present case: it individualizes the assessment of internal multiplicity in a client with borderline personality disorder. What is most enriching is the use of this kind of individualized assessment for the tracking of internal multiplicity over the course of brief therapy. It demonstrates how supposedly subjective experiences change over the course of therapy, and that this phenomenon becomes more and more accessible to psychotherapy researchers eager to understand the mechanisms of change underlying psychotherapy.

A different example is a case included in the aforementioned study by Zufferey et al. (in press) on interactional agreeableness as predictor of outcome. In order to demonstrate the relevance of a case formulation content for the tracking of a central mechanism of change in a client, we selected one client with a particular low score on the PA-AS at session 1, while at same time enjoying good outcome. The research question on the mechanism of change may be:

By which process did this client achieve good outcome while starting out with particularly low levels of interactional agreeableness?

Sandra, 44 years old, lives separated from her husband, with her 10 year old daughter. She consulted with symptoms of depression and bulimia, as well as borderline personality disorder and dependent personality disorder, according to DSM-IV. She was a good outcome case in the original randomized controlled trial (Kramer et al., 2014) with an initial total score on the OQ-45 of 81, which dropped to 47 after 4 months of treatment. Sandra received 10 sessions of psychiatric treatment informed by the plananalytic case formulation. The latter revealed several Plans aiming at a self-presentation as particularly vulnerable, in need and dependent. At the same time, Sandra's Plan structure showed Plans like "Avoid trusting the therapist", "Avoid presenting as too vulnerable" and "Control the therapeutic relationship". Indeed, Sandra stroke in her first session as presenting both highly vulnerable and was crying openly, or had tears in her eyes while describing her current situation. The re-analysis in terms of interactional agreeableness indicated a mean score for Sandra of 3.38, which is particularly low given the sample's average of 4.43 (coined as "neutral"; level 3 was described as "non-obvious hostility"). Clearly, the case formulation based on the Plan Analysis, here presented in a very condensed format in order to save space (additional information and Sandra's full Plan Analysis may be obtained upon request from the author) suggests that interactional agreeableness may be a particularly important challenge for this treatment. In this particular case, the therapist was advised to convey implicit (and explicit) relationship messages consistent with the behavior-underlying motives which were, for example, to maintain a positive image of herself by being a good mother, or by affiliating with others, including the therapist, by opening up and sharing central contents.

Tracking indicators of interactional agreeableness in Sandra's therapy process revealed that they emerged as early as session 4 into the therapy. Sandra opened up more, described more of her past, in particular her conflictual relationship with her mother, and concluded, not without some trembling and tears in her eyes, that her mother had made out of her a "damaged, insane and instable person". Remarkably, at session 9 into the therapy process, Sandra pursued and was able to describe her inner conflictuality with much more nuance and detail: "Always when I go out of the therapy room, I feel I have not been able to exactly describe what I feel. I discussed this recently with my friend who also is in therapy, and she seemed to have the same experience: when we are among us, we can identify our feelings and thoughts very clearly, but when I am with you, it's so much harder." And later in the same session: "I am tired of always fighting for everything. I feel I could now deserve to have something just like that (refers to intimate relationship). And ultimately I know I want to be with someone. I want to restart a live with someone else (tears well up). But at the same time (cries), I know I am such a nasty person that I am sure it's so difficult to live with me; I am such an unbearable person that it seems impossible that someone will accept me as I am." Sandra terminated the brief psychiatric intervention and started psychotherapy the week after. She commented that she understands now what she needs to work on and she does this for the best of herself and her daughter.

Sandra's case illustrates how a client with particularly antagonistic interpersonal stance, or marked with hidden hostility from the first contact on, may move through an increase in interactional agreeableness to, after 4 months of therapy, benefitting from treatment. As such, we may hypothesize that increased activation of Plans related to interactional agreeableness may be the idiosyncratic mechanism of change explaining outcome in this specific therapy. Even if there certainly are standardized measures for agreeableness, or antagonism (e.g., see Costa & McCrae,

1991), the subtle hostility presented in Sandra's clinical presentation may not necessarily be measurable by these questionnaires; an individualized case formulation may be necessary. In this case, the description of the clinical phenomenon is corroborated by both qualitatively thick data, and validated process methodology, as well as standard outcome measures. Multiple methodologies contribute to a solid theoretical account of the understanding of why this case was successful. Such an elaborated theory of a specific case may help better understand the process of therapy and may be anchored in a specific case formulation method.

Assessing the Client's Subjective Experience: Individualizing Assessments in Experimental Designs

There is a possible pitfall in psychotherapy research designs as discussed above, when studying predictors or mechanisms of change. In particular in the context of assuming that emotional processing, or changes in emotional experiencing (Pascual-Leone, 2018; Schnell & Herpertz, 2018), may be part of a central variable of interest, we need to be aware of the so-called emotion-stimulus critique. Of note, this criticism may apply to other concepts outside of emotion research, but it is in the latter that the problems become most salient; this is why we focus on emotional processing as an example of a process variable possibly explaining therapy outcome. Fundamentally, experimental designs assessing emotional processing in clients tend to use standardized stimuli to conclude about a specific emotional change across therapy, or about a specific component predicting the course of a psychological disorder (e.g., Elices, Soler, Fernandez, Martin-Blanco, Portella, Perez et al., 2012). The emotion-stimulus critique (Pascual-Leone, Herpertz, & Kramer, 2016) posits that such classical designs fail, by standardizing the stimuli, to study an emotional response as a consistent and coherent "meta-subjective" phenomenon. Rather, the standardized stimuli used, despite numerous efforts to increase internal

validity of the design, always remain a stimulus which does not confound with the client's experience. Pascual-Leone et al. (2016) argued that experimental designs should aim at standardizing the client's response (rather than standardizing the stimulus), and use therefore the client's idiographic stimuli which had demonstratively evoked an emotional response as a consistent and coherent phenomenon. In order to do this, a number of manipulation checks have been described which enable the researcher to conclude that the participant's response is as predicted, and that it is cogently related with a particular stimulus. Among these manipulation checks, it is important to apply observer-rated measurement of the experiential response, in order to make sure that the phenomenon of interest is really present. In this context, it is important to collect in a pre-testing phase the relevant pool of idiosyncratic stimuli for each participant in a trial. For example, this may involve, like done by Hooley, Siegle and Gruber (2012), the conduct of phone interviews with a significant other (in a study where the emotional reactions to critical statements of a specific significant other were involved). It may also involve, like in one of our studies (Kramer, Kolly, Maillard, Pascual-Leone, Samson, Schmitt et al., 2018), the conduct of an experiential two-chair dialogue on self-criticism, in order to be able to extract a set of individualized self-critical words. These collected words will later become the actual stimuli for the experiment: each participant gets his/her own set of personalized stimuli to which he/she responds.

We tested these assumptions in a pilot study on $N = 8$ right-handed female clients with borderline personality disorder (BPD) undergoing brief treatment. They underwent two (pre- and post-treatment) neurofunctional tests, using functional Magnetic Resonance Investigation (fMRI), of their emotional responses to their own self-critical words. Before each of the fMRI assessments, we observed emotional processing during the two-chair dialogue on self-criticism

(which took place a week before the fMRI session with the same client). In this assessment, the client's own words have proven to evoke shame in these individuals in all instances. Whereas the sample size was too small to conclude about specific neurobehavioral underpinnings of change in self-criticism in BPD, we can report that all manipulation checks were satisfactory, both from a psychological methods viewpoint and from a neurofunctional viewpoint (Kramer, Kolly et al., 2018). This integrative assessment module has proven to be productive, with large pre-post changes found in variables of emotional change (i.e., intra-task arousal), which were related with symptom decrease over the course of treatment. In particular, for the purpose of the present paper, we were able to present self-critical stimuli that were quite idiosyncratic and qualitatively different from one individual to the next. In Table 2, we present two sets of self-critical words from two different clients in this study. Each of these words evoked in session shame in this particular person and the combination of these words may let emerge a pattern of self-criticism that is specific to each individual. It appears that even if there is overlap in the emotional reaction ("shame"), Monica seems to have a rather active and particularly self-contemptuous self-criticism, whereas Desiree seems to present with a more passive and hopeless approach to self-criticism. Of note, both clients experience shame as a result of their self-critical words, and both clients experience comparable levels of self-reported arousal when they experientially evoke their self-criticism. We would actually speculate that it is the idiosyncratic specificity, the fact that the individual is confronted with his/her own actual self-critical content and style as stimulus in the assessment, guarantees the consistency and coherence of the observations. Bringing the subjective experience into the laboratory may prove to be a research avenue of the future.

In what way may introducing the subjective experience into the laboratory help gain insight into some core questions in psychotherapy research? Similar to the use of case

formulation for conceptualizing each individual's core themes in the context of explaining the effects of psychotherapy the use of individualized emotion stimuli in experimental designs may help draw conclusions that are as close as possible to the individual's core themes and needs, thus enhancing precision and ensuring clinical relevance of the conclusions of such studies. This research strategy helps control for the relevance (of the stimuli to the individual) in the experimental design and enable the researcher to focus on other components of emotional change (i.e., arousal, meaning-making, regulation).

This strategy may be the research counterpart of what is discussed in clinical approaches in the past few years under labels like "Personalized Medicine" and "Precision Medicine" (Hamburg, & Collins, 2010; Mathur, & Sutton, 2017). Whereas these terms generally describe the use for diagnostics, treatment and prognostics information from the human genome, the epistemological implications are non-trivial. It means that each individual is treated with an individualized treatment plan and that possibly assessment of its effects may have to be individualized as well. For psychotherapy, the process of personalizing may be done using case formulation: the assessment of the effects may be done using formulation-based variables, as demonstrated earlier, and, if experimental designs are used, there are valid ways of making use of the client's own stimuli, in order to represent the actual core change in each of the participant's experience, rather than changes on generic evaluative variables.

Discussion: Relevance of Individualizing Research Designs for Psychotherapy Integration

In what ways are the perspectives sketched out in this paper relevant to psychotherapy integration? This final question will be examined in the discussion. There are at least four ways in which individualizing research designs pertains to psychotherapy integration: (a) it is relevant for an in-depth understanding of the impact of therapist responsiveness in psychotherapy, (b) it is

relevant for bridging psychological and neurobiological research paradigms, (c) it is relevant for bringing into awareness the plurality of practices, and (d) it is relevant for an integrated understanding of how psychotherapy works and why.

Firstly, individualizing research designs helps re-considering therapist responsiveness. When considering results from controlled psychotherapy studies, or from process-to-outcome analyses, Stiles, Honos-Webb and Surko (1998) have pointed out that researchers have not always taken into account the bi-directional nature of psychotherapeutic interaction. Therapist's formulation and intervention is affected by emerging – client-related or relationship-related – context, while client utterings are also affected by emerging – therapist related or relationship-related – context (see also Hatcher, 2015). In a review, Kramer and Stiles (2015) summarized the studies that have tried to take into account therapist responsiveness in psychotherapy research and pointed out that therapist responsiveness goes beyond evaluative common factors in psychotherapy. We concluded that it is, therefore, not an integrative common factor, comparable to the therapeutic alliance, but a ubiquitous principle of change in therapy.

An evaluative standpoint makes use of variables in a global way (Stiles, 2013), – substantiated for example by a more or less cooperative way of the client and the therapist of being together: this research shows that the dyad has done "the right thing at the right time". A more descriptive standpoint makes use of the specific behaviors the client-therapist dyad displays. The use of case formulation may assist the researcher here to focus on individually relevant core issues, describe in-depth for each client and track them over time (rather than rely on the more global and group level formulation of the variables; see Kramer et al., 2016). Similar to the description and understanding of the client's behaviors and experiences, the therapist's behaviors and experiences may be described and explained using idiographic formulations.

Based on such formulations, the therapy process may then be observed as an idiographic “dance” implying two specific individuals and the mutual adjustments between them. An example of this individual therapist responsiveness to the individual client may be the case study by Meystre, Pascual-Leone, de Roten, Despland and Kramer (2015). Whereas the case study was not based on a case formulation, but assimilation analysis, it still demonstrates therapist responsiveness to idiographically understood client’s experiences and behaviors. As case formulation methodology may increasingly develop towards becoming a research tool, more detailed operationalizations of such idiographic therapist responsiveness methods may emerge. For example, the study by Caspar, Grossmann, Unmüssig and Schramm (2005) used a case formulation method (i.e., Plan analysis) and developed a rating scale for the therapist responsiveness to the Plans activated in the client in a particular session, which is consistent with the motive-oriented therapeutic relationship. Individualized assessment may go towards the core of understanding what is productive in a particular psychotherapy process, by adding precision on the dyad-specific way – style – two persons co-construct over time of *how* to be – and work – together.

Secondly, individualizing research designs helps integrating methods from psychological and neurobiological origins. As demonstrated in particular for the domain of emotion research, the precise definition of the stimuli in an experimental design is crucial for yielding research conclusions as close as possible to the clinical situation. Individualizing stimuli and at same time applying specific manipulation checks related with the individual’s reaction, or experience, to these stimuli may be one way to increase precision in experimental designs (Hooley et al., 2012; Pascual-Leone et al., 2016; see Kramer et al., 2018). Such controlled idiosyncratic experimental tasks may help develop an integration between psychological and neurobiological assessment strategies in psychotherapy research as translational discipline. An integrated assessment module

may “naturally” focus on multi-level processes, and thus enhance our understanding of how mind and body interact, and influence each other. The client’s subjective experience, as observed in psychotherapy research designs, may be a cornerstone for an increasingly articulated and integrated understanding.

Thirdly, individualizing research designs helps raise awareness of the real plurality of methods in psychotherapy. Case formulation practice helps to be aware of the plurality of methods in psychotherapy and opens the way for studying generic case formulation principles. This is one of the objectives of the Kramer (2019) compendium: to give readers the opportunity to access different methodologies, learn about their strengths and weaknesses. Beyond learning about the diversity, clinicians may find it helpful to integrate some of the less known case formulation methodologies in their daily practice. Such an endeavor may foster assimilative integration: from a theoretical “homebase”, the clinician selects concepts and intervention pertaining other theoretical orientations to enrich psychotherapy (Messer, 2001). From a scientific viewpoint, such a sourcebook may prove helpful to delineate generic principles for case formulation: how the information for the case formulation is collected, how the case formulation is constructed, how the case formulation is thought to affect the therapeutic process. In particular, there are many ways in which the different types of case formulation affect the development of a positive therapeutic relationship. New avenues of understanding relational variables in psychotherapy may emerge from rigorous research using these case formulation methods. Testing similar concepts to find out their divergences and similarities may help increase precision of what type of therapeutic relationship may be helpful in which context.

Fourthly and finally, individualizing research paradigms helps increase our precision in the understanding of moderators, predictors and mechanisms of change in psychotherapy. At the

core of the mission of psychotherapy research may lay the increased understanding of why therapy works and in which context what may be effective (Kazdin, 2008, 2009, Kraemer, Wilson, Fairburn, & Agras, 2002; Zilcha-Mano, 2018). Psychotherapy integration may benefit from an ever evolving evidence base provided by studies on mechanisms and moderators. In order to be most helpful for such integrative reflection, research on the how and why of therapy effects may have to boldly move towards a more integrative position. This may prove not to be easy, in particular because the definition of mechanisms of change may be, to some extent, highly specific to one or the other therapy orientation. The use of case formulation, as outlined in the present paper, may be an additional research strategy for defining moderators and mechanisms. Such individualized formulations may look anecdotal at first, but may prove, when aggregated across cases, to be robust variables for explaining outcome of several forms of psychotherapy.

In conclusion, individualizing psychotherapy research designs appears as a post-modern avenue of research opening up to researchers who are eager to take into account the translational nature of the discipline. Case formulation, and the use of the person's own words in the experimental conditions, may be productive ways of individualizing the study procedures, in order to increase precision of the conclusions and help bridge science and practice. Integrating a dynamic understanding of therapist's and client's mutual influences in terms of responsiveness, integrating multi-level assessments, raising awareness of the plurality of methods and the study of mechanisms of change are specific areas pertaining to psychotherapy integration, among others, where more of this kind of work is needed.

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Table 1.

Challenges ahead of case formulation in psychotherapy research, with prototypical studies engaging with these challenges

Challenge	Authored studies
1. Establishment of reliability and validity of case formulation methodology	Armelius et al., 1990; Critchfield et al., 2017; Dinger et al., 2014 ; Ingenhoven et al., 2009 ; Kuyken et al., 2005 ; Pascual-Leone, 2018 ; Völlm, 2014
2. Assessment of impact of case formulation on process and outcome	Emmelkamp et al., 1994 ; Ghaderi, 2006 ; Kramer et al., 2014 ; Schulte et al., 1992
3. Comparison of content of different types of case formulations	Perry et al., 1989
4. Assessment of feed-back loops in case formulation	
5. Assessment of the impact of training in case formulation on the quality of the case formulation content	Minoudis et al., 2013 ; Eells et al., 2005
6. Assessment of the link between case formulation skill and expertise in psychotherapy (“deliberate practice”)	Chi, 2006
7. Development of case formulation methods using novel technologies	Caspar et al., 2004 ; Johansson et al., 2012
8. Use of case formulation for the study of psychotherapy moderators and mechanisms of change	Boritz et al., 2018 ; Crits-Christoph et al., 1993 ; Silberschatz et al., 1986 ; Westerman et al., 1995 ; Zufferey et al., 2019.

Table 2

Two clients with borderline personality disorder with their own 10 self-critical words, as uttered towards the Self in an experiential two-chair dialogue

“Monica”, 22 years	“Desiree”, 26 years
“Disgusting Unsuccessful Failure Ugly slut Stupid Incapable Mistrusting Uneducated Fat Dirty”	“Zero Stupid Depairing Not intelligent Lost No aim No direction Nothing Non-performing Loss”