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Relational Frame Theory: Finding its Historical and Intellectual Roots and Reflecting Upon its
Future Development

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Relational Frame Theory: Finding its Historical and Intellectual Roots and Reflecting Upon its Future Development

The following two chapters in this section of the CBS handbook provide a very detailed and systematic review of Relational Frame Theory (RFT) and its evidence (both Hughes & Barnes-Holmes, this volume). As such, there seems little point in recapitulating some of that work in this opening chapter of the section. Furthermore, the subsequent two chapters provide examples of how RFT has been applied in the domains of educational (Barnes-Holmes, Kavanagh, & Murphy, this volume) and clinical psychology (Torrence, Luciano, Barnes-Holmes, & Bond, this volume). The current section therefore provides a comprehensive overview of the basic and applied wings of RFT. By way of narrative or commentary, this opening chapter aims to provide a particular perspective, perhaps somewhat controversial at the present time, on the history and future development of the account itself.

We begin here by asking the question: What are the historical and intellectual roots of RFT? The seminal volume contains a narrative by Steve Hayes, which addresses the origins of the theory from the personal perspective of the person who first conceptualized the account (Hayes, Barnes-Holmes, & Roche, 2001). However, we are asking a broader and perhaps more fundamental question here. Why did Steve come up with RFT at that time? Or, in other words, what was the confluence of historical and intellectual variables that led him to do so, and subsequently supported the theory's development and continued growth to this day? Here is our view on the matter.

Placing RFT in the Wider Context of CBS

For us, RFT is Darwinian, in the sense that it seeks to explain the development of a complex system (i.e., human language and cognition) through a focus on selection by

consequences. The theory also seems to comport with Wittgenstein's argument that human language is a type of social game (rather than a "cognitive" representational system). Perhaps, more obviously, RFT is also Skinnerian, in that it explicitly draws on the concept of the operant as a unit of analysis. And, last but not least, it is Sidmanian in that it draws upon the insight that derived equivalence relations provide a functional-analysis of symbolic meaning. If you bring each of these historical and intellectual influences together, they lead almost inexorably to RFT. We truly are, as the old cliché goes, standing on the shoulders of giants.

Put in this historical context, one can easily appreciate how a young Steve Hayes who was on a mission "to understand how language is actually used" (2001, p. vii), and was struggling to find a clear functional definition of a verbal stimulus, produced an account of human language and cognition that we now know as RFT. Add to this, a young English Ph.D. student who read Steve's first manuscript on RFT (on a much delayed train ride between Bangor in North Wales and London), and who was obsessed with conducting basic experimental analyses of human cognition from a behavior-analytic perspective. And voila – you have a theory and an international research program. Well, perhaps not quite the latter, at least not at that point, but fast forward almost 15 years and you have what is affectionately now known as the "Purple Book" (2001). And fast forward almost another 15 years and few would deny that we have some momentum, internationally, in advancing RFT as a modern behavioral theory of human language and cognition.

Okay, so far so good. We can all sit back and congratulate ourselves on what a great job we have done – or can we? To be frank, we don't think so. Despite the advances and achievements that have clearly been made over the past 25 years or so, we have grown increasingly concerned that RFT is not being seen as a work in progress, and it is in danger of

becoming ossified as “The Purple Book”. While other volumes and reviews of RFT research may follow, it is critical that they do more than merely genuflect at the tabernacle containing the 2001 treatise. Of course, there is still a great deal of important *empirical* work to do that falls directly out of the original text. Nevertheless, there is no basis for complacency – if RFT does not continue to grow *conceptually*, in our opinion, it will die prematurely.

The other concern we have is the perception within the CBS community that RFT researchers should work away as “the unseen elves in the basement” whose duty is to provide a basic science that underlies acceptance and commitment therapy (ACT; e.g., [Bond, Hayes, & Barnes-Holmes, 2006](#)). In terms of simple PR, this is a disastrous metaphor – what young researcher looking to build a career in academic psychology aspires to be a small green servant who lives in an intellectual basement? Strategically, at a community level, it is even worse because the metaphor appears to dictate the research agenda that the elves must follow as they serve up basic science results to their (applied) Lords and Masters. In our view, the reality of the relationship between ACT and RFT is quite different and is summarized as follows (see also Chapter 18 by Y. Barnes-Holmes, Hussey, McEnteggart, D. Barnes-Holmes, & Foody, this volume, for a more detailed treatment of this issue).

Many readers of this book will recognize that research on ACT has grown exponentially in recent years. Similarly, research on RFT has also grown considerably, but certainly not at the same pace as research on ACT. The difference in growth is understandable given that funding and other resources are typically more widely available for applied research, particularly randomized controlled trials, than for basic (experimental) research in psychology. One consequence of these differential growth patterns is that new concepts and theoretical terms have emerged in the ACT literature that are difficult to interpret from an RFT perspective, and are

certainly of limited value in conducting basic (functional) experimental analyses of human psychopathology (hereafter referred to as psychological suffering). The emergence of the “hexaflex” in the ACT literature, for example, has proposed concepts such as “acceptance,” “cognitive defusion,” and “being present” (along with the core concept of psychological flexibility) as central to psychological well-being. Unfortunately, these concepts have proven difficult, if not impossible, to pin down in terms of relatively precise functional analyses. This limitation has been widely recognized in clearly acknowledging that the hexaflex is composed of “middle-level” terms, which are more theoretically specific and clinically useful than folk-psychological terms (e.g., mindfulness and self-awareness), but nonetheless do not provide the precision, scope, and depth associated with well-defined functional concepts (e.g., reinforcement, stimulus-generalization, and derived transformation of functions). There are no immediate grounds for concern here, however, because this “tension” between the basic and applied sciences is expected and supported within the functional approach itself. For example, in a recent article, Hayes, Barnes-Holmes, and Wilson (2012) argued:

We should not expect RFT labs to provide an account that will apply point to point with existing clinical models. For example, while excellent progress has been made in the deictic basis of sense of self, the same cannot yet be said for acceptance. Fortunately, a reticulated approach does not demand this. As basic findings are extended, entirely new middle level terms may emerge and existing ones will fall away or be supported only in part. For example, cognitive control over behavior may be shown to be related to, say, the distinction between relational framing that is relatively brief and immediate versus extended and elaborated...

These new basic findings may provide a way to think about the issues engaged by concepts like “fusion” and “defusion” even if there is no point correspondence. (p. 8)

Indeed, it appears that the foregoing argument has been reflected recently in a renewed interest in attempting to connect RFT concepts and analyses to human psychological suffering with the publication of texts written explicitly for clinicians (e.g., Törneke, 2010; Villatte, Villatte, & Hayes, in preparation). While such books are indeed welcome and will hopefully orient clinical psychologists and applied researchers towards the importance of functional analyses of human language in understanding and treating psychological suffering, the critical ingredient will involve developing and maintaining vibrant and productive programs of basic RFT research in this domain. Above and beyond further empirical research, however, it is critical that RFT continues to develop conceptually if it is to connect in a meaningful way with clinical and applied psychology generally. To be frank, in our view, RFT is not sufficiently developed conceptually, at the present time, to step up to the challenge of reticulating in a highly productive and useful way with the needs and concerns of our applied colleagues.

In making this argument, we are not suggesting that RFT “nerds” should be left alone to get on with arcane, abstruse or obscurantist research replete with A1s, B1s, and C1s, and yet another derived transformation of function that occurs, unsurprisingly, through a relational network. And, we are not suggesting that we simply import previous RFT research into reasonably receptive areas of mainstream psychology. This latter strategy we have labeled, rather cynically perhaps, “I bring you C” research. By this, we mean conducting RFT studies that were originally done more or less 10 to 20 years ago, but using mainstream group designs in areas such as fear or evaluative conditioning. In effect, this work involves showing transfer effects

across three or more stimuli (A-B-C), rather than just one or two stimuli (A-B), as is typical in mainstream conditioning work. In the short term, RFT may gain some traction in mainstream psychology with this strategy, but in the longer term it is an intellectually bankrupt move.

As noted earlier, we are arguing that RFT research should not continue with A1-B1-C1 studies alone. Certainly, this early research was instrumental in establishing *new* functional analytic-abstractive “units of analysis” (e.g., relational frames, relational networks, etc.). However, in our view, we need to move beyond merely “proving” that these units of analysis “exist,” and begin to harness the full power and potential of RFT as a theory of human language and cognition. To appreciate the point we are making here, let us revisit the concept of a unit of analysis in behavioral psychology.

Units of Analysis

All mature sciences have basic, mutually agreed-upon units of analysis (e.g., proteins, cells, genes, elements, atoms, and fields). In general, the basic strategy is to identify relatively simple units that allow the research scientist to construct and deconstruct complexity. Behavioral psychology, consistent with a bottom up approach to science, is built upon generally agreed units of analysis. One of the most fundamental of such units is the discriminated operant. Typically, this is understood as an overarching, spatio-temporal, contextually defined analytic unit. A well-worn example is the presence versus absence of a light in an operant chamber that comes to control the probability of a response class, such as lever pressing. The discriminated operant is not defined by any one element in and of itself, but by the relations among the three elements together (i.e., antecedent, behavior, consequence). Critically, the unit of analysis that is the operant can be used to analyze relatively simple behaviors or more complex psychological events. For example, a rat pressing a lever for food in the presence of a light can be understood

as an operant response, as could a child's temper tantrums to escape a demanding task, or an individual's panic attacks to escape a socially threatening situation.

In applying the concept of the operant to the analysis of any particular behavior, it is important to specify the functional response class upon which both the discriminative stimulus and the reinforcers operate. In dealing with relatively simple responses this can be a straightforward task. For example, lever presses are relatively easily defined and measured in an operant chamber, but when tackling more complex behaviors the identification of the response unit becomes more challenging – not only conceptually, but also empirically. Nowhere else is this more apparent than in the struggle that behavioral psychology has had in the domain of human language and cognition. Skinner's (1957) attempt to do this in *Verbal Behavior* aimed to provide a conceptual operant analysis of the units of human language in terms of mands, tacts, intraverbals, and so on. Although progress was certainly made with this conceptual analysis, particularly in the arena of developmental disabilities, its lack of success in leading to a vibrant program of experimental research, not to mention in the broader clinical domain, has been well documented ([Dymond, O'Hora, Whelan, & O'Donovan, 2006](#)). One could argue that the key problem was that *Verbal Behavior* failed to identify the key response classes involved in human language and cognition, which can be categorized as genuinely symbolic or referential (see [Barnes-Holmes, Barnes-Holmes, & Cullinan, 2000](#)). It was not until Sidman (1971) developed the concept of the equivalence relation that an operant analysis of the symbolic properties of human language and cognition was made possible (see also Sidman, 1994). The subsequent emergence of Relational Frame Theory provided a scientific unit of analysis of the symbolic properties of language that was deliberately and self-consciously operant in nature – that is the relational frame (Hayes et al., 2001).

Relating as a Unit of Analysis

The critical point about RFT is that the functional response unit involves relating, rather than pressing a key or pointing at a stimulus. That is, once relational framing as an operant has been established, operant contingencies now impact on the response unit of relating rather than pressing or pointing (see [Hayes & Barnes, 1997](#)). As has been noted previously, conceptualizing an operant response class as involving the act of relating requires a thorough and radical functional understanding of the operant. To put it bluntly, one cannot think of the operant in topographical terms, and fully appreciate the functionality of the RFT definition of symbolic verbal behavior. By way of example, it is easy to think of lever pressing in topographical terms because you can visually see a discrete key press in time. That is, it “looks like” what it is. The act of relating, however, involves a number of discrete events spread out in space and time (i.e., it is an overarching, spatio-temporal unit of analysis). Nevertheless, the temptation to deconstruct the response of relating into more visually discrete units such as looking, pointing, and key pressing can be almost irresistible for more topographically minded researchers.

One of the core problems, as we see it, with a lot of RFT research to date is a failure to fully appreciate the operant nature of the analysis. We have been so mesmerized by the extent to which relational framing appears to provide so-called “unreinforced,” “emergent,” “derived,” or “untaught” behaviors that we have rarely asked questions about the relative strengths or probabilities of the operant units of relational framing themselves. In one sense, this blind-sightedness is understandable because demonstrating a relational frame in the laboratory requires training and derivation of untaught relations. Indeed, RFT studies are carefully crafted, for the most part, to ensure that derived responses cannot be explained by histories of reinforcement or other well-established behavioral principles, such as primary stimulus generalization, higher

order respondent conditioning, etc. Although such demonstration research is undoubtedly important, rarely does it lead to questions about the persistence, probability, or strength of a particular pattern of relational responding. Instead, the concepts and methods invite a binary or dichotomous way of thinking about relational frames: In the highly rarefied environment of the research laboratory, frames are either demonstrated or they are not.

This research strategy is entirely consistent with the definition of a relational frame as something that emerges in the absence of a history of direct reinforcement. In the natural environment, however, novel or emergent relational responses occur rarely without reinforcement by a listener or other variables, such as achieving internal verbal coherence. In this sense, there appears to be a disjoint between studying language as relational framing in the laboratory and studying language as it occurs in the natural environment. At some point, therefore, it seems important to draw a line under the need to engage in nothing but demonstration work, and to accept that RFT could provide reasonably adequate units of analysis for the study of human language and cognition in the real world.

Of course, we recognize that demonstration and analytic RFT research may be best thought of as existing on a continuum. That is, there are clear examples of pure demonstration studies and others that appear to be more analytic. For example, most of the early RFT research involved demonstrations of predicted entailment and transformation effects (e.g., [Dymond & Barnes, 1995](#); Roche & Barnes, 1997; Steele & Hayes, 1991). On balance, other studies have also involved demonstrating these types of effects, but have also begun to address specific analytic questions. For instance, some researchers have sought to determine if it is possible to separate mutually- and combinatorially-entailed derived relations using delayed feedback (Healy, Barnes-Holmes, & Smeets, 2000). And, others have analyzed the relative extent to which derived

fear and derived avoidance responses persist during periods of extinction (Luciano et al., 2013). What seems important now, however, is to fully recognize the need for an active program of analytic research, to develop a systematic framework for organizing this research, and to move forward with the empirical challenges this will entail.

At this point, it seems useful to reflect upon recent developments in RFT that extend beyond the previously discussed phase of demonstration research. Nowhere else is this clearer, in our view, than in the development of the Implicit Relational Assessment Procedure (IRAP) and the Relational Elaboration and Coherence (REC) model (Barnes-Holmes, Barnes-Holmes, Stewart, & Boles, 2010; [Barnes-Holmes, Murphy, Barnes-Holmes, & Stewart, 2010](#); [Cullen, Barnes-Holmes, Barnes-Holmes, & Stewart, 2009](#); Hughes, Barnes-Holmes, & Vahey, 2012). In making this argument, we are not suggesting that the development of a measure of so-called “implicit cognition” was critical; rather the attempt to develop a methodology for measuring natural verbal relations, or relational framing “in flight,” was the important move. In other words, the initial intention was to shift the focus, both empirically and conceptually, from establishing and demonstrating relational frames in the laboratory, to measuring the strength, probability or persistence of relational framing that had been established by prior histories. Unfortunately, however, the research began with “frames in flight” and then became focused on “implicit cognition.” We recognize that this work has been valuable on a number of fronts, but in our view it has also served to undermine the ongoing development of RFT as a basic scientific enterprise. It seems time to return, therefore, to the original focus of attempting to analyze the dynamics of relational framing in flight. In doing so, the line will be firmly drawn, and we will have crossed the Rubicon from pure demonstration to analytic research.

A Multidimensional Multi-Level Framework for the Analysis of Relational Framing

In making this shift, it seems useful to propose a conceptual framework that will help to guide future research on the dynamics of relational framing. Towards this end, we have begun to conceptualize these dynamics in a three-dimensional space¹, involving degrees of derivation, complexity, and coherence in arbitrarily applicable relational responding (see Figure 1). As an aside, we recognize that additional dimensions are involved, hence we use the term multidimensional (rather than 3-dimensional). For example, behavioral fluency is assumed to be inherent in each of the three dimensions, in that relational responses, be they relatively simple or complex, coherent or incoherent, or derived only a few or many times, may be emitted at high or low rates involving relatively smooth or erratic response patterns. And it seems likely that such differential degrees of fluency will yield possible differences in the strength, persistence, or probability of the relevant response classes in future contexts. Furthermore, as we explain below, levels of behavioral development are also an important part of the conceptual framework that we are proposing. For present purposes, however, we will focus on the three dimensions illustrated in Figure 1.

Broadly speaking, derivation refers to the extent to which a particular pattern of relational responding has occurred in the past; complexity refers to the various ways in which patterns of relational responding may differ in terms of properties such as number of stimuli, relations, transformation of functions, and varieties of contextual control; and coherence refers to the extent to which a particular pattern of relational responding yields relatively consistent consequences. More informally, derivation refers to how “well practiced” a verbal response has become. Given that the first time a derived response is emitted it is by definition highly derived,

¹ It is important to note the distinction between the well-established defining properties of a relational frame (i.e., mutual entailment, combinatorial entailment, and the transformation of function) and the dimensions that we discuss here. The former provide the definition of one specific analytic unit (the relational frame), whereas the latter provide the dynamic units that we hope will facilitate the analysis of relatively simple and complex instances of human language and cognition.

level of derivation reduces as it becomes more practiced. The term complexity is relatively intuitive in that it refers to the intricacy or density of a pattern of relational responding. For example, all things being equal, a mutually entailed relational response is less complex than a combinatorially entailed response. Finally, the concept of coherence also seems intuitive because it refers to the extent to which an instance of relational responding yields a predictable consequence. For example, if you are told that A is bigger than B, you would expect to be told that you are correct if you concluded that B is smaller than A.

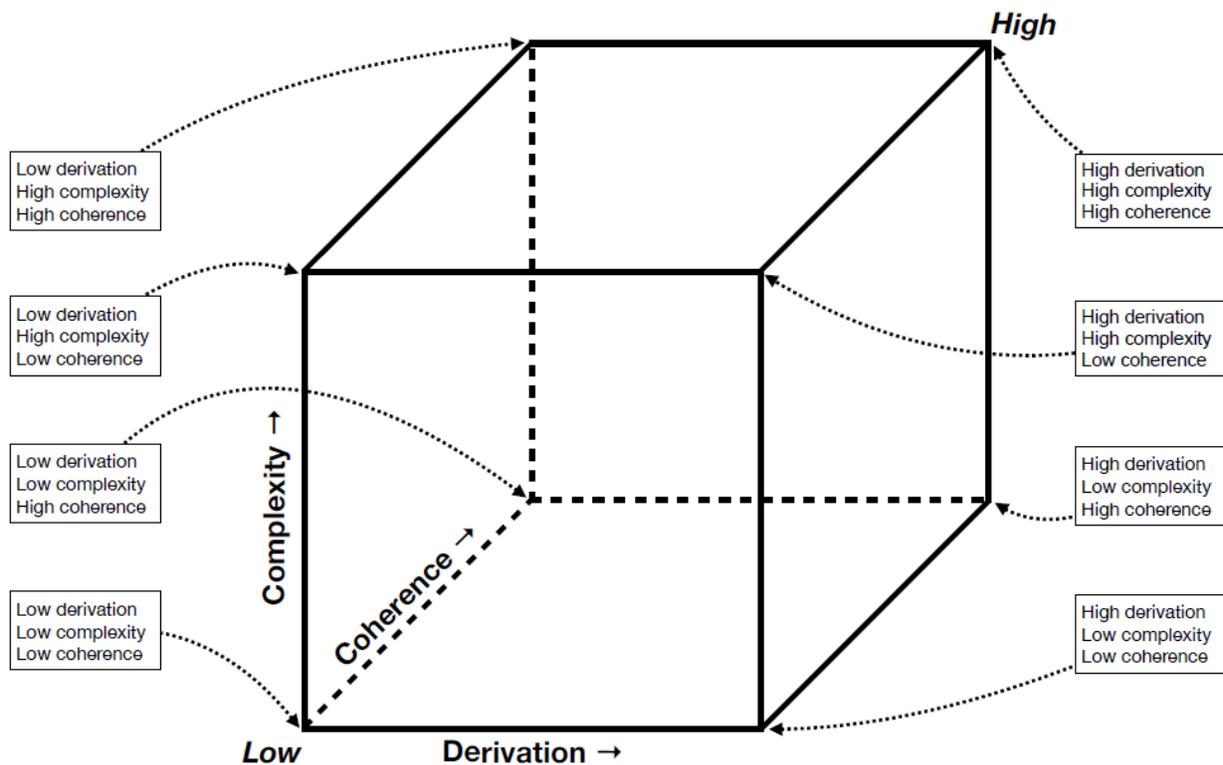


Figure 1. A graphical representation of the interaction among three key dimensions of arbitrarily applicable relational responding as conceptualized within the multidimensional multilevel (MDML) analytic framework.

Although each of these three dimensions has been discussed previously in the RFT literature, the proposed framework suggests a shift towards considering the dynamic and

interactive nature of these dimensions. That is, they should be seen as codefining or covarying with each other. For example, a relatively complex relational network, such as a story, may require less derivation, appear more coherent, and seem less complex with repeated exposures to the network. Critically, these three dimensions apply to at least five different levels of behavioral development, such as (a) the relational response, (b) the relational frame, (c) the relational network, (d) the relating of relations, and (e) the relating of relational networks.

For illustrative purposes, let us focus on derivation. At the level of the relational response, for example, each time a person reasons that if A is the same as B then B must be the same as A, that particular (mutually entailed) response reduces in derivation. This point has been made before in the context of the REC model, but what has often been missed in previous writings is a full appreciation of the fact that derivation (and indeed complexity and coherence) also varies at other levels of behavioral development. For example, derivation may also be seen as reducing at the level of the relational frame itself. That is, each time an individual is exposed to an exemplar of a particular relational frame (e.g., $A=B=C$, therefore $C=A$; $D=E=F$, therefore $F=D$, etc.), the overarching pattern of entailed equivalence relations may be seen as becoming less and less derived. In other words, the frame itself strengthens. The same general logic applies to other levels of behavioral development, such as the relating of relations. For example, research has shown that children improve in their ability to relate relations with increasing age, suggesting that multiple exposures to such tasks reduce the derivation involved in the overarching pattern of relating relations itself (see Stewart & Barnes-Holmes, 2004, for a summary).

The critical point is that because derivation, complexity, and coherence are seen to operate and interact at multiple levels of behavioral development, the resulting framework

generates a plethora of potential units of analysis. As articulated here, the framework yields 15 analytic units (i.e., 3 dimensions multiplied by 5 levels of behavioral development). And perhaps most importantly of all, each of these units may be conceptualized as a verbal or relational response class that may enter into a discriminated operant, thus allowing for direct manipulation via appropriately arranged environmental contingencies of reinforcement. It is this analytic tool that we have labeled a multidimensional multilevel (MDML) conceptual framework.

To appreciate the potential of this framework it seems useful to consider just one example of how it facilitates an RFT analysis of human suffering. Imagine two socially anxious individuals, a man who “freezes” or panics in the moment when first seeing an audience he is about to address, versus a woman who experiences intense anxiety as a result of ruminating the day before a public talk about the many possible ways in which she could perform badly. It might be tempting to think of the first example as involving a largely nonverbal, respondent or Pavlovian response, whereas the latter clearly involves extended or complex verbal or relational responding. According to the MDML framework, however, these two examples both involve verbal behavior, but may be conceptualized as located in different areas of the three-dimensional space illustrated in Figure 1. For instance, one could argue that the man’s “freezing” response is in fact relational and likely involves low-complexity, low-derivation, and high-coherence. The woman’s rumination-based anxiety is more obviously relational, but may be conceptualized as involving high-complexity, high-derivation, and high-coherence. Note that in this example, complexity and derivation differ across the two examples, but coherence does not (because in both cases, the relational responding is consistent with many other examples of “socially-anxious” behaviors in the histories of the two individuals).

The MDML framework thus conceptualizes virtually all such clinically relevant behaviors as verbal, but explains the clear differences in terms of multiple dimensions (a more complete analysis may also refer to different levels of behavioral development but this would require a detailed

treatment of the MDML, which is beyond the scope of the current introductory chapter). Within the MDML, therefore, there is no simplistic dichotomy between verbal and nonverbal behavior based on whether a response is derived versus controlled by direct acting contingencies. Rather, all units of analysis within the MDML remain verbal response classes even when they are impacted upon by direct contingencies of reinforcement (see O’Hora, Barnes-Holmes, & Stewart, 2014, for a relevant empirical example). In effect, the MDML serves to highlight the intensely operant but wholly verbal nature of RFT, with a focus on the impact of direct acting contingencies on its (verbal) operant units of analysis, from the most simple or basic relational responses to the most complex contextually controlled interactions among complex relational networks. In one sense, this is RFT “super-style” but only time will tell if we have “gone too far” with this particular conceptual analysis. In any case, we are happy to let the data guide us in this regard.

As an aside, it is also worth noting that in the language of ACT’s hexaflex model, both examples of social anxiety outlined above might be seen as involving “fusion” with thoughts and feelings about social embarrassment, etc., and thus verbal processes are involved in both instances. We are certainly comfortable with such a claim, but would point out that the MDML analysis we offer here provides a degree of analytic precision that the concept of fusion, and other middle-level terms do not (see Chapter 18, Barnes-Holmes, Hussey, et al. this volume). As such, we believe that the MDML has the potential to generate basic experimental analyses of behaviors that are possibly relevant to the phenomena to which fusion refers, without those analyses being driven directly by the middle-level concept itself. In our view, this would be a healthy and productive way to help realize the CBS ambition to establish and maintain a reticulating relationship between RFT and ACT.

Conclusion

We have only just begun to explore how the MDML framework may be applied to clinical (and educational) domains, but it is looking very promising, leading us to new insights

and ways of thinking about human suffering and its treatment. As noted earlier, we believe that RFT as articulated in the “Purple Book” is not sufficiently well developed to reticulate in a highly productive and sophisticated way with applied research and practice. In short, the problem with reticulation is a problem with RFT, not just ACT (or other applied wings of CBS). As we view the years that lie in front of us, therefore, we as RFT researchers feel the intense pressure of producing a version of RFT that can in fact step up to that challenge. The challenge will not be met simply by writing interpretations of human suffering and its treatment in RFT terms as articulated in the “Purple Book” or in more recent volumes. Nor will the challenge we face be addressed simply by building links with other scientific traditions, such as cognitive psychology, neuroscience, evolutionary science, social anthropology, etc. This outreach work will certainly be important strategically and politically, and also scientifically, but we must not mistake political or strategic progress *per se*, for empirical and conceptual progress in the basic science of human language and cognition within CBS itself. In short, CBS must do that work, because no one else will do it for us. We hope that this introduction and the four chapters that follow will help the reader begin to see the enormity and importance of that challenge, but in so doing this section will also provide at least a glimmer of hope that it may just be possible to deliver what RFT was originally designed to do.

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