# Chapter 3

## Recent Conceptual and Empirical Advances in RFT: Implications for Developing Process-Based Assessments and Interventions

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## Overview

Behavioral science has always concerned itself with the processes of learning, adaptation, and behavioral change. Until the late 1960s or early 1970s, a widely-held assumption was that these behavioral processes, broadly speaking, were common to both nonhumans and humans. This assumption was reflected in the earliest translational research associated with behavioral psychology. The famous study by Watson and Rayner (1920) in which they created and "treated" a phobia in a young child, using the processes of classical conditioning and extinction, which had been identified and studied by Pavlov using dogs (1897, 1902), provides a clear-cut example. Other examples, of course, abound in the literature, including the study of learned helplessness (Seligman, 1974), inhibition (Wolpe, 1958), and fear generalization (Lashley & Wade, 1946), each of which has been used in experimental analogs of both human and nonhuman "psychopathology." The continuity assumption, at the level of psychological processes, from animals to humans has not been without value, but it remains that – an assumption, not empirical.

While many scientists assume that there are differences between human and nonhuman psychological processes (e.g., Chomsky, 1959; Pinker, 1994; Premack, 2007; Sidman, 1994; Wilson, Hayes, Biglan, & Embry, 2014), there remains highly-regarded cutting-edge process-oriented clinical research that fails to grapple meaningfully with these differences. For example, recent work by Craske and colleagues on an inhibitory learning approach to maximizing the impact of exposure therapy (Craske, Treanor, Conway, Zbozinek, & Vervliet, 2014) draws heavily on basic research conducted with nonhumans

(e.g., Bouton, 1993). The underlying assumption thus appears to be that psychotherapy should be based on, and needs to target, inhibitory learning processes that are common to both human and nonhuman species. In pointing to the work of Craske, we are not questioning its quality or effectiveness, and indeed we applaud Craske's focus on processes in developing therapeutic interventions. But, we believe that a more complete process-based approach to human psychological suffering and its treatment should be informed by research that has sought to understand the lines of fracture that separate animal and human psychological processes. The current chapter will attempt to present an overview of this work.

## Relational Frame Theory

In recent years, our research group has been seeking to develop and extend Relational Frame Theory (RFT) so that it connects more directly with the types of clinical issues and concerns with which therapists grapple (see Barnes-Holmes, Barnes-Holmes, & McEnteggart, in press; Barnes-Holmes et al., 2018). In doing so, we have begun to conceptualize psychological events for verbal humans as involving a constant behavioral stream of relating (R), orienting (O), and evoking (E), summarized as ROE-ing (pronounced "rowing")[1]. In very simple terms, *relating* refers to the myriad complex ways in which language-able humans can relate stimuli and events; *orienting* refers to noticing or attending to a stimulus or event; and *evoking* refers to whether a noticed stimulus or event is appetitive, aversive, or relatively neutral. The three elements of the ROE are not entirely separable units of analysis, but work together in virtually every psychological act emitted by a verbally-able human.

[1] Although the current chapter does not cover all of the basic concepts in RFT, the ROE is in essence an RFT concept. However, the concept of the ROE is broader than the concept of a frame in RFT, in that the ROE aims to capture the most basic to the most complex patterns of arbitrarily applicable relational responding from mutual entailment, combinatorial entailment, complex relational networks, relating relations to relating relational networks (see below and Barnes-Holmes et al., 2017, for further details).

For illustrative purposes, imagine you are about to enter a forest with a tour guide who warns you, "Watch out for snakes with red and yellow stripes because they are quite aggressive and also highly venomous." If the warning is understood, it may be conceptualized as involving an instance of relating (e.g., relating snakes with particular properties to danger), which may increase the likelihood that you will *orient* towards any unusual movement on the ground in the forest that could be a snake, followed by an appropriate *evoked* reaction, such as backing away, freezing, or beating it with a stick if the moving object is perceived to be a snake with red and yellow stripes. In effect, your reaction to the snake in the forest is conceptualized as involving the three elements of the ROE.

It is important to understand that the three elements of the ROE do not necessarily interact in a linear or unidirectional manner, but are dynamical. Thus, for example, an orienting response may produce relating, which then leads to an evoked response. Imagine you entered the forest without hearing any warning about snakes. You might be less likely to orient toward snake-like movements, in the absence of the previous warning, but if you did notice a snake you may engage in some relational activity, such as emitting the self-generated rule "better safe than sorry" and withdrawing slowly. In this latter case, orienting led to relating, which led to evoking.

The examples of ROEing we have just provided are adaptive in that they help the individual to avoid a potentially lethal snake-bite. But, less adaptive examples of ROEing are easily generated from common clinical interactions. Imagine a husband who is possessive and jealous with respect to his new wife and insists that they can never holiday in places where she has spent time with previous partners. The husband's verbal knowledge (*relating*) that his wife had spent time in a particular location with a former partner thus *evokes* a response to that location as aversive, in part because it increases orienting responses toward his own intense feelings of jealousy.

The "solution" might be for the couple to avoid going on holidays to any of these locations. The avoidance strategy may "work," at least temporarily, if the couple chooses to go somewhere "new" and they enjoy their vacation, in part because the husband experiences few, if any, feelings of intense jealousy while they are away. But ultimately, this "solution" will fail because it is impossible to avoid all of the stimuli that increase the likelihood that he will orient toward the feelings of jealousy related to his wife's past, particularly given the highly abstract and arbitrary nature of relating behavior within the ROE.

The reader may note in the foregoing example that a feeling or private event (i.e., jealousy) has been highlighted as a stimulus, toward which an individual may orient and indeed, which they may find aversive. In making this claim, the ROE should not be seen as a mentalistic concept, unless of course you wish to criticize Skinner's (1945) concept of private events as also inherently mentalistic. Indeed, the Skinnerian concepts of private events and sense of self have been elaborated considerably within RFT. The details of this elaboration are beyond the scope of the current chapter, but we will briefly consider how the self fits into the concept of the ROE before continuing.

## The Verbal Self and the ROE

The verbal self, as defined by RFT, is best thought of as a dynamical and complex relational network. Specifically, a young child needs an advanced level of derived relational responding in order to establish and refine a verbal self through interactions with the verbal community (Barnes-Holmes, Barnes-Holmes, Roche, & Smeets, 2001). Furthermore, the self-referential terms (e.g., "I," "me," "self," "mine" the child's name, etc.) come to participate in a complex network of relational responses some of which are more constant than others. For example, the statement or network "I am older than my brother but younger than my sister" is unlikely to change once it is established, whereas other self-related networks are more "fluid" (e.g., "Today I feel really sick, but tomorrow I might feel better").

In this sense, it is useful to think of the verbal self as lying at the very center of a vast and undulating web of derived or arbitrarily applicable relations, some of which almost never change, with others emerging and disappearing as determined by a host of contextual cues and variables.

Once a verbal self is established in the behavioral repertoire, it becomes a stimulus or ongoing event that participates in virtually every ROE. The vast majority of these ROEs may be seen as relatively trivial in the grand scheme of things, but the verbal self remains a participant in such acts. For example, the relating, orienting, and evoking that occur in the act of switching off a bedroom lamp before going to sleep could be seen as extremely trivial, but it is still a "verbal you" who turns off the lamp to achieve some outcome (e.g., a good night's sleep). Other ROEs, of course, may be seen as far more fundamental, and are clearly self-focused. For example, the relating, orienting, and evoking that occur in the act of taking an overdose to end one's life could be seen as an attempt to escape, in a very permanent and final way, the very essence of the verbal self. In any case, the constant and iterative daily cycle of ROEing, from the most trivial to the most fundamental of human acts, could be seen as creating what philosophers and others have called a sense of purpose or meaning to one's life.

The concept of the ROE is designed to provide a general conceptual unit of analysis, based on RFT that aims to capture the distinct way in which most humans navigate their psychological worlds. In a broad sense, the ROE defines human "acts of meaning" that are only made possible through the evolution of human language and our learning of a specific language through our ongoing interactions with the verbal communities in which we reside. The complexities involved in learning to engage in such acts of meaning are far from simple and we have been working on an RFT-based framework for conceptualizing and analyzing

the dynamics involved in human acts of meaning, namely the hyper-dimensional multi-level (HDML) framework.

The HDML is an extension of the multi-dimensional multi-level (MDML) framework (Barnes-Holmes et al., 2017). The HDML replaces the M ("multiple") with H ("hyper") in order to emphasize the relating *and* functional properties of acts of meaning, as defined within the ROE itself. To appreciate the shift in emphasis that the HDML framework involves, we will first focus on the relational properties of the framework, and then explain how the orienting and evoking functions of the ROE are incorporated into the MDML, thus yielding what we now refer to as the HDML. In this sense, the MDML and the HDML are more or less the same framework, but the latter contains additional foci (i.e., orienting and evoking functions) that were not explicitly contained in the MDML, which was very much focused on relating.

The HDML framework, similar to the MDML, specifies five levels of relational responding: mutual entailing; relational framing (the simplest type of relational network); relational networking; relating relations; and relating relational networks. Mutual entailing refers to the bidirectional nature of verbal relations (e.g., If A is more than B, then B is less than A). Relational framing, at its simplest, involves a combination of two mutually entailed relations (e.g., If A is more than B and B is more than C, then A is more than C). Relational networking involves combinations of different patterns of relational framing (e.g., If A is the same as B and B is the same as C, and C is more than D, and D is more than E, then E is less than A, B, C, and D). Relating relations involves, at its simplest, relating a mutually entailed relation to another mutually entailed relation (e.g., If A is the more than B, and in a separate relation C is more than D, then the relationship between the two relations, A>B and C>D, is the same). Relating relational networks is similar to relating relations, except that it applies to separate relational frames or separate complex relational networks.

In addition, the framework conceptualizes four dimensions for each of these five levels: coherence, complexity, derivation, and flexibility. *Coherence* refers to the extent to which current relational responding is broadly consistent with previous patterns of relational responding (whether they are directly trained or derived). For example, if you are told that A is larger than B, the mutually entailed response B is smaller than A would be deemed relationally coherent. *Complexity* refers to the detail or density of a pattern of relational responding, including the number or types of relations in a given relational network. For example, the mutually entailed relation of sameness would be considered less complex than a comparative relation because the former involves only one relation (same), but the latter involves two (more and less) relations (e.g., A=B entails B=A, but A>B entails B<A). *Derivation* refers to the number of times a derived response has been emitted; the first response is high in derivation because it is being derived entirely from a trained relation, but thereafter derived responding gradually acquires its own history and is, therefore, less and less derived relative to the initial relation that was trained. For example, having been told that A is more than B, the first time you derive that B is less than A the response is highly derived because it is based entirely on the first premise. But as you repeatedly derive B<A, that response acquires its own history and becomes less and less derived from the first premise. *Flexibility* refers to the extent to which patterns of derived relational responding may be influenced or changed by contextual variables (e.g., when trained baseline relations are reversed). For example, imagine one day you learn that A is more than B and you derive that B is less than A. On a subsequent day, you learn that A is less than B (and thus B is now more than A). Your ability to derive this new relationship, which does not cohere with the original relation, requires flexibility. Within the MDML framework (now the HDML), each of the five levels intersects with each of the four dimensions, thus yielding a total of 20 units

of experimental analysis, which it has been argued emphasize the highly dynamical nature of derived relational responding involved in human language and cognition (see Figure 1).

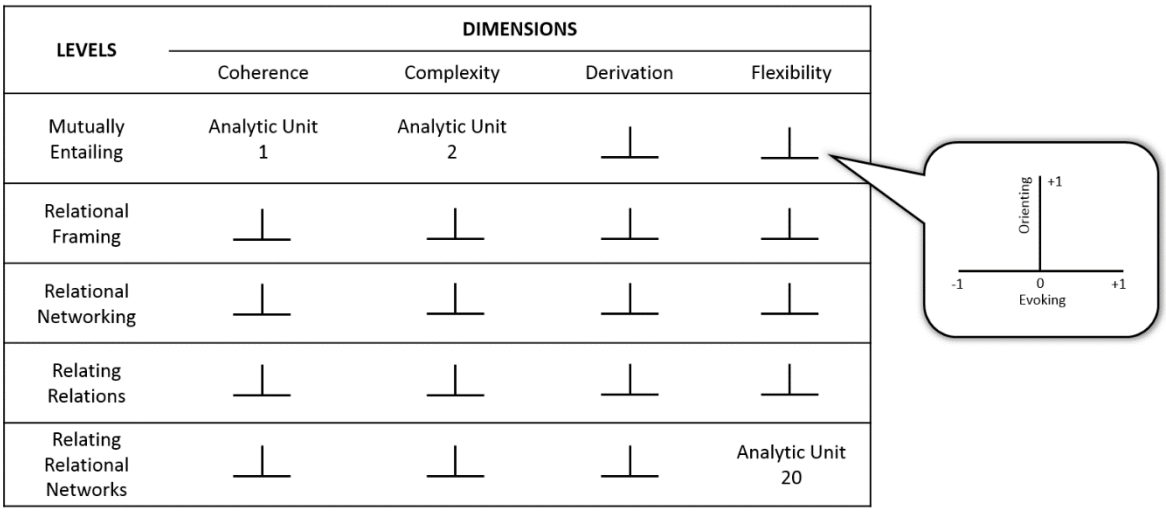


*Figure 1.* A Hyper-Dimensional Multi-Level (HDML) framework, which extends the MDML framework by emphasizing the relating and functional properties of the ROE as a unit of analysis in RFT.

In the foregoing, the MDML framework appears to focus largely on the relating or entailing properties of the units of analysis, while the ROE, as described previously, contains relating *as well as* functional properties of events (i.e., orienting and evoking). To reflect this, any pattern of relational responding captured within the 20 analytic units of the HDML framework also involves orienting and evoking functions. As just one example of how orienting, evoking, and relating combine synergistically in the analysis of a human psychological act, imagine that you are walking on a hot day through a shopping area while visiting a new city and you have not had anything to drink for a few hours. As a result, you may find yourself noticing or *orienting* towards an advertisement for ice-cream in a shop window, which then *evokes* a strong appetitive response for actual ice-cream, and the emission of a relevant *relational network*, such as 'I'll stop here and go in and buy myself an ice-cream.' The synergistic interactions of these three components for each of the 20 units of

the HDML framework are represented in each cell of Figure 1 by the inverted "T" shape. The vertical line represents the relative value of orienting functions from low to high, and the horizontal line represents the relative value of evoking functions from extremely aversive (on the far left) to extremely appetitive (on the far right). Within the context of the ROE, these functions impact upon, and are impacted by, the relational properties highlighted within each of the 20 units of the HDML framework. And virtually any contextual variable may be involved in influencing the dynamical interplay among the three properties within or across cells.

## Description of the ROE for Assessment and Treatment

In the current section, we focus on how the HDML framework could help to conceptualize ROEs or acts of meaning in the context of psychological suffering, its assessment, and its treatment. To do so, consider again the example of the jealous husband previously who avoids going on holiday with his wife to locations she visited with previous partners. Imagine that the husband goes to see a psychotherapist for help with his intense jealousy. Early in therapy, the husband says, "I have become obsessively jealous about my wife's previous lovers." The therapist asks, "Do you feel jealous all of the time?" and the husband replies "Oh yes, the jealousy never goes away – it dominates my every waking hour." The therapist then asks, "How long have you felt like this?" and he replies, "Almost from the first day I met my wife - she has always been very open and honest about her past life - and although we've been married for a few years now, my jealous feelings seem to be getting worse rather than better." The therapist then asks, "Why do you think you are so jealous?" to which he replies, "I don't know really, I just am. I try hard not to be, but I just can't help it."

Within the framework of the HDML, we could conceptualize this therapeutic interaction as follows. The husband's first statement, "I have become obsessively jealous. . ."

involves mutually entailing the verbal self (i.e., words and terms, such as "I" "self", and husband's name) with "jealous." His next statement ". . . the jealousy never goes away. . ." suggests that the relational responding is *high* in coherence in the sense that it coheres strongly with virtually all other self-statements, and also suggests a very strong orienting response toward jealousy (because it never goes away).

His answer to the question about how long he has felt this way ("Almost from the first day I met my wife") suggests that the relational responding is also *low* in derivation, because he has been focused on his jealousy for years (e.g., orienting toward jealousy is well-established). When asked why he is so jealous, the reply "I don't know really, I just am. I try hard not to be, but I just can't help it" suggests that the relational responding is *low* in complexity and *low* in flexibility.[2]

The relative precision the HDML framework provides in the assessment of psychological suffering may be appreciated in considering how subtle differences in the husband's responses might be interpreted. Imagine that when the therapist asked, "Do you feel jealous all the time?" he had replied "No, I can see many reasons not to be jealous and that I am just being stupid when I feel that way." This could suggest responding that is *low* in coherence (rather than *high*), and that orienting toward jealousy was not always particularly strong, because it is inconsistent with other examples of his relational networking with regard to his wife. Imagine also that after being asked how long he had felt this way the husband had responded, "I only started feeling really jealous in the past few months" (rather than "Almost since the first day. . ."). Such a response could be interpreted as relatively *high* in derivation, because it emerged only recently in his relational responding. It may also indicate that the

[2] In the interests of brevity, the foregoing interpretation focuses simply on the four dimensions of the HDML framework, rather than the intersections between the dimensions and the levels of relational responding. In general, however, it seems likely that therapeutic interactions such as the one previously described, often involve relational networking, relating relations, and relating relational networks; see Barnes-Holmes et al. (in press).

orienting function of jealousy is increasing, but only recently. Imagine also if he had provided a list of reasons why he is so jealous (rather than simply saying, "I just am"); for example, if he had said "My mother and father divorced when I was young because my mother had an affair, and my first wife cheated on me, and I never really understood women anyway." In this case, the relational responding may be seen as relatively *high* rather than *low* in complexity. Finally, imagine if in response to the therapist's last question "Why do you think you are so jealous?" the husband had replied calmly "Maybe I'm just the jealous type and I need to learn how to deal with this." This response would suggest relational responding that is relatively *high* in flexibility (i.e., because the husband is willing to consider new ways of behaving).

In the foregoing, we have offered various interpretations of the husband's hypothetical responses by focusing on the *entailing* or *relational* properties of the HDML framework, with some references to functional properties, in terms of the orienting functions of jealousy. But ROEs require focusing also on the *evoking* (functional) properties of relational responding. To reflect this, any pattern of relational responding captured within the 20 analytic units of the HDML framework involves orienting *and* evoking functions. As we shall see, focusing on the evoking functions within the ROE is particularly important in directing the ongoing functional analyses of the client's verbal behavior (in previous publications, we have referred to this as "verbal functional analysis," see Barnes-Holmes et al., 2018).

Having identified jealousy as the core verbal stimulus presented by the client, we of course interpret this stimulus as lying at the center of a complex relational network. In the therapy work we described above, we assessed the relational and orienting functions of this network, but it is also essential to explore the appetitive or aversive evoking functions of the network. In this sense, we are exploring the client's ROEing (relating, orienting, and evoking) with respect to the "jealousy" network. Paradoxically, jealousy (the network) may

have some appetitive, and not just aversive, evoking functions. For example, reporting that the problem for the husband is jealousy, although distressing in itself, may facilitate avoidance of a more complex long-established issue, such as a fear of rejection.

During the course of the verbal assessment, it becomes apparent to the therapist that the client is relatively comfortable in discussing jealousy as a problem. It is important therefore for the therapist to continue to explore the jealousy network with a view to identifying areas of the networks or related networks that are less comfortable for the client. This might start out with the therapist asking questions such as "Why do you think jealousy plays such a strong role in your life?" If the client appears somewhat confused, becomes more reflective, or even struggles to engage with the questions, the therapist may seek to probe relational networks that may be related to jealousy but possess evoking functions that are more aversive (S-). For example, the therapist might ask the client "What if your jealousy feels like it might protect you from *rejection* because it means that you always know what your wife is up to, and that way you won't get a nasty surprise?" If the suggestion of rejection evokes what appears to be a relatively strong aversive reaction in the client, the therapist may pursue this network and/or this reaction.

In summary therefore, focusing on the evoking functions of jealousy allows the therapist to separate out the appetitive (S+) and aversive (S-) functions of this type of self-labeling. That is, "jealousy" may have less aversive functions than "rejection." Indeed by describing himself as "jealous," the husband enables himself to avoid the more accurate (functionally speaking) description of his behavior as involving fear of rejection. To simplify using our example, we might refer to "jealousy" and related self-evaluations as the S+ networks (with both aversive and appetitive functions), while referring to "fear of rejection" as the S- networks (with largely aversive functions). Relatively speaking, this makes it possible that the husband's engagement with the S+ networks actually serves to reinforce

avoidance of the S- networks. In therapy, we use ongoing verbal functional assessments of the evoking functions of specific relational networks to guide our first steps toward dealing with the S+ (e.g., jealousy) networks, because clients engage with these more readily, and thus the therapist's move in this direction will seem less confrontational. We are nonetheless cautious that engagement with S+ networks likely continues to facilitate the avoidance evoking functions of the S- networks.

In grappling with the contrasting evoking functions of the jealousy versus rejection networks, the therapist may assist the client to relate the two networks, which involves operating at the highest level of the HDML framework. The assumption here would be that these networks have rarely, if ever, been related in this way, and thus level of derivation would be very high, while coherence (in terms of coordination) between the two networks would be very low. Relating the relational networks as coordinate would ideally serve to transform the orienting and evoking functions of both jealousy and rejection. Specifically, talking about jealousy would actualize some of the aversive functions of rejection, and thus orienting toward rejection would increase, and its aversive functions would decrease. For example, the therapist might say something like, "Had you ever thought that your jealousy might actually make your wife want to reject you, because maybe it makes you almost impossible to love?" The purpose here is not to berate the client for being jealous or for fearing rejection, but to encourage them to engage with the highly aversive functions of their fear of rejection. In doing so, when they find themselves orienting toward jealousy in the natural environment, this also serves to evoke some of the functions of the rejection network. For instance, the therapist might suggest the following, "The next time that jealousy shows up, you might try to notice that jealousy is just a decoy for the more painful heart of the problem that is the fear of being rejected." In doing so across sessions, the husband in this case would be encouraged to communicate openly with his wife at the very moments he feels

jealous. For example, instead of engaging in the previous jealousy-based behaviors (e.g., a barrage of questions as soon as the wife comes through the door), he could simply say something to her like, "This is one of those times when I just feel really rejected and instead of being jealous about it, I just wanted to tell you honestly about how I really feel inside." In so far as this would enhance the honesty and intimacy within their relationship, it may also serve to reduce the aversive functions of talking about rejection.

## Research Support

In conceptualizing therapy, both assessment and treatment, as outlined in the example above, it is important to understand that the current chapter attempts to present an example of the very cutting-edge of our efforts to develop a language that connects the basic laboratory research with the practice of doing actual therapy in the clinic. This has been the most challenging task that we have ever faced in our careers and is very much a work in progress that only commenced in earnest over three years ago. At the current time, the highly technical concepts we are working with, and which appear in the current chapter (e.g., the MDML and HDML frameworks, and the ROE) have emerged directly from basic experimental research that is only just appearing in published peer-reviewed articles (Finn, Barnes-Holmes, Hussey, & Graddy, 2016; Finn, Barnes-Holmes, & McEnteggart, 2018; Harte, Barnes-Holmes, Barnes-Holmes, & McEnteggart, 2017, 2018; Kavanagh, Barnes-Holmes, Barnes-Holmes, McEnteggart, & Finn, 2018; Kavanagh, Roelandt, Van Raemdonck, Barnes-Holmes, Barnes-Holmes, & McEnteggart, in press; Leech, Bouyrden, Bruijsten, Barnes-Holmes, & McEnteggart, 2018; Leech, Barnes-Holmes, & McEnteggart, 2017). At this point therefore, the manner in which we are connecting this basic experimental work and its application in therapy is at its very early stages, although we have begun to run workshops that attempt to present this work in its clinical context. There is at present no directly relevant clinical research that demonstrates that the way in which we are approaching therapy improves upon

therapy that is not as firmly rooted in the terms and concepts that we are developing and that emerge from basic experimental RFT research.

## Future Directions

On balance, much of the clinical work, including supervision and workshops, that we have engaged in over many years is broadly consistent with what we have presented here. What is now new is an ongoing self-conscious attempt to continue to refine and develop both the basic theory, conceptually and empirically, along with the development of clinical assessment and therapy as a reticulating exercise. In this context, we anticipate the most important challenge will be to train both basic researchers and clinicians in a way that will progress the work in a meaningful manner. Perhaps even more critically, it will be important to test the extent to which this training generates a vibrant program of ongoing basic research, and also improves upon therapeutic practice in terms of precision in assessment and treatment. As such, we acknowledge that what we have offered here is tentative and exploratory. But in our view, only in pursuing such a research agenda will the aspiration of a process-based approach to psychological suffering, firmly rooted in basic behavior-analytic concepts, be fully realized.

### References

Barnes-Holmes, Y., Barnes-Holmes, D., Roche, B., & Smeets, P. M. (2001). The development of self and perspective-taking: A relational frame analysis. *Behavioral Development Bulletin, 10*(1), 42-45.

Barnes-Holmes, Y., Barnes-Holmes, D., & McEnteggart, C. (in press). Narrative: Its importance in modern behavior analysis and therapy. *Perspectives on Behavioral Science (Special Issue on Narrative).*

Barnes-Holmes, D., Barnes-Holmes, Y., Luciano, C., & McEnteggart, C. (2017). From the IRAP and REC model to a multi-dimensional multi-level framework for analyzing the

dynamics of arbitrarily applicable relational responding. *Journal of Contextual Behavioral Science, 6*(4), 434-445.

Barnes-Holmes, Y., Boorman, J., Oliver, J. E., Thompson, M., McEnteggart, C., & Coulter, C. (2018). Using conceptual developments in RFT to direct case formulation and clinical intervention: Two case summaries. *Journal of Contextual Behavioral Science (Special Section on "Conceptual Developments in Relational Frame Theory: Research and Practice"), 7,* 89-96.

Bouton, M. E. (1993). Context, time, and memory retrieval in the interference paradigms of Pavlovian learning. *Psychological Bulletin*, *114*(1), 80.

Chomsky, N. (1959). A review of B.F. Skinner's Verbal Behavior. *Language*, *35*(1), 26-58.

Craske, M. G., Treanor, M., Conway, C. C., Zbozinek, T., & Vervliet, B. (2014). Maximizing exposure therapy: An inhibitory learning approach. *Behaviour Research and Therapy*, *58*, 10-23.

Finn, M., Barnes-Holmes, D., & McEnteggart, C. (2018). Exploring the single-trial-type-dominance-effect on the IRAP: Developing a differential arbitrarily applicable relational responding effects (DAARRE) model. *The Psychological Record,* 68(1), 11-25.

Harte, C., Barnes-Holmes, Y., Barnes-Holmes, D., & McEnteggart, C. (2017). Persistent rule-following in the face of reversed reinforcement contingencies: The differential impact of direct versus derived rules. *Behavior Modification*, *41(*6), 743-763.

Harte, C., Barnes-Holmes, D., Barnes-Holmes, Y., & McEnteggart, C. (2018). The impact of high versus low levels of derivation for mutually and combinatorially entailed relations on persistent rule-following. *Behavioural Processes, 157, 36-46.*

Kavanagh, D., Barnes-Holmes, Y., Barnes-Holmes, D., McEnteggart, C., & Finn, M. (2018). Exploring differential trial-type effects and the impact of a read-aloud procedure on deictic relational responding on the IRAP. *The Psychological Record, 68*(2), 163-176.

Leech, A., Barnes-Holmes, D., & McEnteggart, C. (2017). Spider fear and avoidance: A preliminary study of the impact of two verbal rehearsal tasks on a behavior-behavior relation and its implications for an experimental analysis of defusion. *The Psychological Record, 67*, 387-398.

Leech, A., Bouyrden, J., Bruijsten, N., Barnes-Holmes, D., & McEnteggart, C. (2018). Training and Testing for a Transformation of Fear and Avoidance Functions using the Implicit Relational Assessment Procedure: The First Study. *Behavioural Processes,* 157, *24-35*.

McEnteggart, C. (2018). A Brief Tutorial on Acceptance and Commitment Therapy as Seen through the Lens of Derived Stimulus Relations. *Perspectives on Behavioral Science (Special Issue on Derived Relations).* Advance online publication.

Lashley, K. S., & Wade, M. (1946). The Pavlovian theory of generalization. *Psychological Review, 53,* 72-87.

Pavlov, I. P. (1897, 1902). *The work of the digestive glands.* London: Griffin.

Pinker, S. (1994). *The language instinct.* New York: William Morrow & Co.

Premack, D. (2007). Human and animal cognition: Continuity and discontinuity. *Proceedings of the National Academy of Sciences*, *104*(35), 13861-13867.

Seligman, M. E. P. (1974). Depression and learned helplessness. In R. J. Friedman and M. M. Katz, (Eds.*), The psychology of depression: Contemporary theory and research* (pp.83-126). Washington, DC: Winston-Wiley.

Sidman, M. (1994). *Stimulus equivalence: A research story*. Boston, MA: Authors Cooperative.

Skinner, B. F. (1945). The operational analysis of psychological terms. *Psychological Review, 52*(5), 270-277.

Watson, J. B. & Rayner, R. (1920). Conditioned emotional reactions. *Journal of Experimental Psychology, 3,* 1-14.

Wilson, D. S., Hayes, S. C., Biglan, A., & Embry, D. D. (2014). Evolving the future: Toward a science of intentional change. *Behavioral and Brain Sciences, 37*(4), 395-416.

Wolpe, J. (1958). *Psychotherapy by reciprocal inhibition.* Standford, CA: Stanford University Press.