Randomised Controlled Clinical Trials –
The influence of this methodology on the development
of theory in Psychotherapy: Some Ruminations.
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The pragmatic utility, for the day-to-day practise of Psychotherapy, of having an evidence base demonstrating that as a discursive genre, it is as efficacious as medication in facilitating emotional, cognitive and behaviour change, is crucial. This comparative outcome data has been gathered using Randomised Controlled Clinical Trials (RCTs), a methodology that has established itself as ‘The Gold Standard’ in treatment efficacy research. Ruminating upon some of the unintended consequences of the uncritical use of this research model is the aim in this discussion.

It should be recalled that the purpose of RCTs is to take basic research findings establishing uni-directional deterministic cause-effect/input-outcome relationships between synthetic chemical compounds (e.g., antibiotics, vaccines) and naturally occurring pathogens (e.g., bacteria, viruses) from ‘in vitro’ laboratory experiments (the equivalent of which is not available in Psychotherapy research) and to field test the chemical packaging and delivery techniques on the general patient population in order to ‘fine tune’ the targeting of the previously empirically identified uni-directional, causal chemistry so as to maximise the already experimentally established biophysiological curative effects of the active chemicals which carry the power to produce efficacious physical outcomes, while controlling for the psychological influence of the ubiquitous placebo effect. This psychological phenomenon seems to arise when medical patients augment the chemically active, causally determined efficacious outcome of their prescribed medications by imagining or mentally anticipating a future or when recalling episodic autobiographical, emotionally laden memories of a past, without their physical, pain producing, symptoms. Note that in this model, the mind is acknowledged as both existing and as being influential in bringing about physiological changes. It is just that its active processing of internally produced stimuli in the form of ‘thoughts’ or mental representations, the provenance of which lies in episodic and semantic declarative memories as well as in procedural memory systems, masks the physical causal effects of the prescribed medication. For this reason the mind’s acknowledged affects on the body have to be methodologically and/or statistically controlled out of consideration, given that it is the chemistry that is of primary interest for clinical medical practise. Our primary interest of course, is in the feeling-infused thoughts/ideas that emerge from the episodic and procedural memory systems of our clients and that influence the ways in which our clients, utilising their pre-frontal inhibitory capacities, cope or don’t cope with their emotional distress. Thus we ought to be very interested in the mental/psychological mechanism of action of the spontaneously self-generated and therefore externally uncaused, although influenced, placebo effect. Our colleagues in Sport Psychology, Health Psychology and now Positive Psychology are applying the processes mediating the placebo effect to clients and seem to be achieving very useful outcomes.
So, basically, in the application of a uni-directional, deterministic, causal medical technique, ‘things’ are done to a passive, accepting organism. This only requires an asymmetrical relationship, because, in such a situation communication can be limited to closed-ended questions and to the giving of directions. This is an example of the deterministic, objective Newtonian, billiard-ball, uni-directional cause-effect model in action and is the foundation of modern prescriptive medicine. Within this model the medical practitioner functions as an applied Bio-chemist; as the agent who, firstly, makes a diagnosis and then aims and releases the causal power inherent in the prescribed medication that has already been empirically established as being capable of producing efficacious outcomes in that particular diagnostic context. Here bed-side manner is treated as causally irrelevant in the deterministic achievement of these chemically mediated curative outcomes.

In an intellectual climate still strongly influenced by behaviourism, this deterministic Newtonian billiard-ball uni-directional model was adopted, only partially, it should be noted, in the guise of RCT methodology, by Psychotherapy Researchers in the 1960’s and 1970’s (cf. Bandura, 1974) and has never been revised to take into account the mental processes that mediate, rather than deterministically produce, effects which emerge out of those goal-directed, self-initiated, apperceptive or self-reflective bi-directional or reciprocal mental operations which, within the framework of the, now dominant, cognitive paradigm, are hypothesised as being involved in the activity of communication; that is, of the sharing of information between cognitively active and feeling minds; (cf. Bruner, 1990). Given the theoretical conceptual frames then in fashion, a (superficial) analogy was identified between sentient beings exhibiting emotional/cognitive distress (that is mental or functional psychiatric symptoms) and similar sentient beings exhibiting signs of biochemical and physiological disregulation (that is, organic physical symptoms). Each ‘had’ something that was called an illness, with Psychiatrists and Neurologists treating these different manifestations of the underlying illness process of which the observable symptoms were but the surface manifestations. Thus the deterministic, mechanistic uni-directional model applicable to treating tangible physical illness was applied to the treatment of mental emotional distress in an organism capable of cognitive self-reflection and of communicating and exchanging both factual and emotional information with other like organisms. That is, a conceptual framework that had proven explanatory power in the objective tangible physical world was applied to the interpretation and understanding of mental events operating in the virtual world of feelings and ideas; but, because of the positivist, mechanistic structure of scientific explanation then extant, mental constructs were viewed as being irrelevant within a Scientific context.

Thus, given the conceptual requirements of Thorndike’s ‘Law of Effect’, the putatively causal, deterministic therapist instigated, ‘behavioural stimulus’ referred to as ‘the treatment technique’, was reified despite being logically, an abstract generalisation or category term, that, as a matter of interest, also encompassed those necessary and sufficient conditions that are currently called common factors (eg. Rogers, 1957). Upon its reification and objectification as an observable ‘stimulus’, ‘the treatment technique’ could be treated as if ‘it’, as a type of thing rather than an abstract idea, was actually an objectively measurable variable and so could be viewed as a causal behavioural stimulus. Thus ‘the treatment technique’ became the focus of study (cf. Norcross, 2002, p120). Hence the widely used schema – technique + any trained therapist, causes efficacious outcomes. Any putative deterministically causal technique of intervention was generally conceived as containing those active behavioural ingredients considered as being both necessary and sufficient to activate or instigate therapeutic changes in the client in a manner loosely analogous to the
taking of medication. That is, that the simple exposure to and therefore acceptance (a metaphorical swallowing) of what ‘The Therapist’ said would automatically cause or determine an efficacious behavioural outcome in the passively receptive and compliant client. Expressed a little differently; just being given an appropriate dose of the psychological medicine called ‘the therapy thing’ by the active, thinking Psychotherapist causes the passive, receptive client to recover, because ‘the therapy thing’ contains the deterministic necessary and sufficient conditions that have the power to automatically and mechanistically activate the requisite behaviour changes constituting an efficacious outcome in the passive and receptive client. Just being exposed to the causal, activating power contained within necessary and sufficient conditions is, by definition, sufficient to produce recovery. Hence there was no role envisaged for an actively thinking, motivated and engaged client in these deterministic stimulus-mindless organism-response or input-outcome models of change.

However, as the ‘Cognitive Revolution’ gained momentum, it became theoretically acceptable to refer to internal mentalistic virtual processes as explanatory constructs. So it came to pass that conversational Psychotherapy was accepted by many practitioners as involving conceptual insight learning in which the fostering of symmetrical relationships could be very influential in the construction by clients of conceptual and emotional perspectives different from those that they originally held and which would enable them to effortfully transform existing mental/emotional narratives into more adaptive ways of interacting with their environments thereby generating much less emotional distress. This was called ‘insight’ learning because it seemed to require inductive reasoning similar to that used by researchers in formulating their hypotheses. It also transpired that Bower & Trabasso, in 1963, demonstrated unequivocally that conceptual insight learning is not congruent with an automatic stimulus-response, ‘Law of Effect’ type of explanation. (See also ‘Set Learning’ and ‘Learning to Learn’ in Harlow, 1949; and Bateson’s ‘Five Levels of Learning’ in his 1972 book).

Conceptual insight learning involves reflecting upon our episodic and semantic declarative memories. This effortful mental activity is also called thinking and requires the skilled use of the various capacities of our working memory systems which have a processing limit of 7±2 bits of information. Now, isn’t the contemporary position on thinking that it is an effortful, energy consuming activity that can bring about fundamental alterations in existing declarative memory structures and construct new ones? If this is so, could it be the case that those effortfully thinking clients who actually bother to process the message content of therapist verbalisations, ‘cause’ or enable the therapist intervention techniques to ‘work’, via the processes of assimilation and accommodation, rather than the techniques deterministically causing or forcing those clients to recover? The crucial issue may be, whether and to what extent our clients effortfully use their working memory capacity. (See for example Helen Mayberg’s work regarding CBT, eg. Goldapple et al., 2004). Is it not also the case that within the context of the Cognitive Paradigm information, in the form of signals or messages, is not construed as constituting a determining sufficient condition that, of itself, is capable of causing anything in particular. Messages can have a range of outcomes, from being ignored, laughed at, undermined or complied with either enthusiastically or reluctantly.

There is as we all know, a well established difference between what the signal denotes given the intention of the sender and what it connotes for the receiver. Hence the
much emphasised importance of feedback in the communication ‘circuit’ rather than
the uni-directional path of the Newtonian ‘causal arrow’. It seems also to be
accepted that the ‘value added’ thinking work performed by the client on the
messages put out into the ether by the (thinking) therapist involves firstly selecting
which (if any) of the therapist’s messages will be processed more deeply and,
secondly, processing them in individualised, idiosyncratic ways (For reviews see cf.

Even though there is a small but slowly growing group of researchers who view
clients as being active “…non-linear dynamic systems in whom multiple processes
interact continuously in response to a constantly changing environment” (for example
Greenberg & Watson, 2006, p5), with their very next breath these same researchers
make statements such as “each therapeutic approach probably affects the system with
some specific change process at a chosen level of the system” (p 6) and also “…it
probably is the specific change factor unique to a particular approach, plus the
relational factors common to may approaches, that succeed in producing comparable
change in the whole person. Thus all approaches end up altering the person…” (p 6).

Greenberg & Watson’s (2006) intended meaning seems very clear: that an active, data
selecting and information processing non-linear dynamic system is being
deterministically caused to change by an externally applied uni-directional stimulus
called an intervention technique which contains the power, in its constituent necessary
and sufficient conditions, to force efficacious outcomes to occur. There is no
suggestion in these particular words that effortfully thinking, active clients decide to
bring about their own changes by selectively and dialectically engaging with
information that they choose to extract out of the environment provided by the
transactions which constitute conversational psychotherapy.

The argument presented above would imply that our conceptualisations as to how
attitude and behavioural change occur in a dialectical conversational psychotherapy
would appear to be informed by an irrelevant deterministic uni-directional causal
model. A causal explanation of a dialectical or transactional (Lazarus, 1998)
emotional/cognitive phenomenon cannot utilise a uni-directional methodological
behaviourism as an explanatory framework if we want to claim construct validity; as
Hampton (2009) pointed out.

A salient point for this general line of argument was made by Botterill and Carruthers
(1999). They draw attention to the fact that Methodological Behaviourism does not
(have to) deny that there are actual, mental states and internal psychological
mechanisms, rather, it need only suggest that research attention would be more
productively focused on that which can be quantitatively measured and objectively
analysed; the ‘that’ being the various environmental stimuli deterministically and
causally impacting on the organism and the behaviours emitted by the organism in
response to those (deterministically) impacting stimuli. They also point out that there
is a real danger in treating the organism as a black box, because this assumption (or
contextual frame) can come to imply that the organism is simply a passive conduit
between the impacting, putatively causal, stimuli and the seemingly mechanistically
produced reflex-like responses. A danger can then lie in ignoring the extent to which
mental/emotional data processing, which involves feed-forward and feedback loops
rather than uni-directional influence, and which emerges out of the internal
mechanisms of interacting information communication networks, focuses upon and
modulates only a limited selection of inputs from all those available in our immediate
environment. Only then does our mind/brain construct and mediate purposive, intentional outputs which our pre-frontal lobes may, or may not, choose to monitor and further act upon. We cannot function very well without an active and working memory system.

If biomedical efficacy research involves the study of deterministic physical reactions between biochemical entities in the context of a passive patient who plays no role at all in how the chemical reactions develop; and if conversational psychotherapy efficacy research, where the assumption of an actively and apperceptively thinking client, the quality of whose reflective mental work is crucial to the outcome of the therapeutic conversation seems to be required, involves examining whether two actively engaged individuals transmitting and receiving mental, virtual information in a ‘to and fro’ dialectical or transactional manner (cf. R.S. Lazarus, 1998) manage to work their way towards a therapeutic outcome, then it is difficult to see how these basically different activities map onto each other.

This would suggest that there is a necessity for developing an information processing communication model of influence to adequately deal with the information flows which are the building blocks of the dialectical transactions which constitute effective conversational Psychotherapy (cf. Pentony, 1981). The tangible/physical and the virtual/mental dimensions seem to be quite separate natural categories even though the mental is an emerging functional property of biological systems constructed out of physical molecules (cf. Searle, 1992 & 1997; Webster, 2003).

Another way of arriving at the same conclusion is to take the following approach: According to Dawes (1994, p50), Behaviour therapists in the 1960’s and according to Beck (1972), CBT practitioners in the 1970’s, who were looking for a scientifically valid methodology capable of establishing the causal efficacy of their didactically presented, manualised techniques, decided upon RCTs as being the most appropriate available. Both Behaviourist and CBT approaches are based on deterministic stimulus-response/cause-effect uni-directional models of behaviour change. The major competing psychotherapeutic orientations, psychoanalysis and the humanistic approaches, also subscribed to drive-based deterministic/mechanistic models of change (Barton, 1974; Pentony, 1981; Chapter 5). These orientations also considered that the prescriptive techniques applied by the therapist to the client were causally efficacious, that is, that they automatically and deterministically brought about therapeutic personality change (or, at least new behavioural responses) (cf. Rogers, 1957). This belief may have arisen from an assumption implicit both in our everyday language (our ‘folk physics’) and as a conceptual carry over from Skinner’s Behaviourism and Thorndike’s ‘Law of Effect’.

This line of argument was based on an important theoretical assumption: That the stimulus-response or ‘S-R’ schema accurately represents behaviourism’s purported mechanism of action. The reason this point is important is that, as discussed above, the transfer of RCT methodology from the domain of clinical medical discourse to that of clinical psychological discourse is based on the use of conceptual metaphorical thinking, which is a conventional means of conceptualising one domain of experience in terms of another, much better understood, domain. This form of argument is logically valid only if both domains have conceptual structures which are logically commensurate with each other (cf. Gilbert Ryle; 1949, re: category mistakes).
Thus the following question is important: Does the S-R schema accurately describe what actually occurs when rats, pigeons or other sentient beings are placed in, say, a maze or a Thorndike/Skinner puzzle box, and an attempt is made to teach or train them to achieve some pre-determined, by the experimenter, outcome, symbolised by the ‘R’ in the ‘S-R’ schema? This question is important because, if its underlying logic is not commensurate with the logic of medical discourse, then the metaphor breaks down and with it so does the rationale for the application of RCTs to conversational psychotherapy.

Now the implication of the ‘S-R’ schema is obvious. It is that the experimental animals are, theoretically, nothing but passively reactive recipients of external driving forces represented by the ‘S’ in the ‘S-R’ schema. Without the push provided by ‘S’ they, theoretically would do nothing. Causal stimuli are supposed to directly and deterministically bring about responses in a mechanistic, reflex-like manner; no causal stimulus, no automatic, reflex-like response. Such is the nature of a direct, Newtonian billiard-ball type, causal relationship.

So, descriptively and motivationally, what does appear to occur in the Skinner Box to the very hungry rat or pigeon placed in there at the beginning of a set of training trials (cf. Bandura, 1974)? Firstly, it should be noted that the motivational state of the experimental animals must be very important to the outcome of the experiment, as a good deal of time and effort by the laboratory staff is put into making sure that all the experimental animals to be used are equally very hungry immediately prior to the experiment. Being equally hungry, presumably means being equally motivated to learn whatever it is that their eating behaviour driven by their need to assuage their feelings of hunger will be made contingent upon by the experimenters, although the rats do not know this.

This non-observable but obviously crucial internal state of the animal, which significantly influences or primes the animals attentional pre-disposition, as well as creating a very strong physiological drive state, is then subsequently ignored in the theoretical explanation of the data. In a similar manner, the motivational state and primed, or otherwise, attentional pre-disposition of patients enrolled in RCT studies of the efficacy of psychotherapy and their consequent interest, or lack of it, in paying attention to therapist verbal productions and then, through the application of the requisite mental effort, doing the cognitive work required to learn new habits of feeling, acting and thinking which will displace the emotional distress, is also ignored. The attentional interests of the patients in a RCT study are considered as being irrelevant to the RCT learning outcomes caused by the impact of the necessary and sufficient conditions contained in the therapeutic technique acting on the patient, and so are treated as error variance and controlled out by the process of randomisation. Thus causal factors, of which any classroom teacher or sports coach knows the value, are being excluded from consideration.

Returning to our Skinner Box; we have a very hungry experimental animal which is placed inside. It may initially remain still for a short while, but then it starts to explore its environment of its own accord. No special external prodding is required for the rat, say, to start sniffing around (the ecologists have written extensively about this type of behaviour which is, apparently, normal in the wild. In fact it appears to be necessary for the survival of the animal. It also appears not to be learned but is inherent and heritable). As there is very little in the box to distract the very hungry animal’s primed attention for food cues away from its focus on its drive to reduce its
felt sense of hunger, it will, reasonably quickly and usually quite accidently, somehow activate the food dispensing apparatus thoughtfully provided in the box by the experimenters. A pellet of food suddenly appears ‘out of the blue’ accompanied by some noise. This unusual event, for the rat, attracts the hungry animal’s primed attention. It eats the pellet and continues to explore its sparse environment. As food accompanied by noise continues to appear in the same area on repeated occasions, irrespective, from the rat’s point of view, of what it does, the hungry animal begins to focus its primed attention on this area and hence spends much of its time there. Anthropomorphically speaking, it appears puzzled by what is occurring and seems to be trying to solve the problem of the ‘magically’ appearing food. It probably doesn’t realise that it is a subject in a learning experiment. So from the hungry rat’s point of view the ‘manna from heaven’ seems, in some convoluted way, to be connected to actions that the animal, itself, is producing. It appears to ‘try out’ various combinations of actions in order to ‘see’ which combination is most likely to have enticed the food out into the open on the last occasion. After some time the rat settles down to producing a ritualised pattern of actions that have as their consequence the re-appearance of food. It would seem that the rat is capable of the cognitive computations required to associate memories of performing a particular set of behaviours with memories of the food materialising. These experiential memories seem to have a significance for the rat which is analogous to us forming a causal hypothesis connecting our actions with their apparent or perceived effects. Thus, while the rat thinks, believes or is of the opinion, that its actions are causing the food to come out into the open, the experimenters know that it is their planning and behavioural execution that is actually causing or shaping the animal to learn new tricks. What we seem to have here is a difference of perspective as well as a definitional distinction between a proximal and a distal cause.

From the rat’s experiential point of view, it is the rat’s actions that have solved the problems that it encountered in its environment. Neuroscience tells us (see any Introductory Psychology textbook) that animal brains have evolved the computational capacity for adaptive problem-solving. Their brains have adapted their computational capacities to the demands of processing large amounts of sensory data which enables them to very accurately be able to specify their changing environmental conditions by rapidly processing new inputs and thereby making ongoing adjustments to pre-existing procedural memories and contextual mental frames so as to cope with currently emerging adaptational demands. The consequences of this, largely automatic and unconscious, cognitive computational processing of sensory data is that, in the circumstances prevailing in the Skinner Box, the rat ends up having a good meal and, as a totally unintended consequence from its point of view, also learns a new trick.

Now, this description of what occurs in a classical operant conditioning learning experiment is totally contrary to that which is implicit in the ‘S-R’ schema, as well as being incommensurate with the Newtonian, deterministic uni-directional causal model. It describes a cognitively active rat whose computational skills are crucial to a successful solution of the problem which its environment arbitrarily foisted upon it.

Recall that both Skinner’s Operant Conditioning and Thorndike’s ‘Law of Effect’ are expressions of the explicitly stated theoretical principle that behaviour is directly and deterministically driven by its consequences. The schema used to symbolise this principle is the ‘S-R’ icon used as the basis of transferring RCT methodology to the study of CBT and behaviour therapy outcomes. Now the usual meaning given to the
word ‘consequences’ is that it refers to what happens after an action is carried out. The valence of the consequences is a value judgement. This implies that the rat has the cognitive capacity to form categories and differentiate between what happens to be occurring out there in its environment that is totally independent of itself and what occurs that is due to its own behaviour. It must be capable of distinguishing self from other; between animate and inanimate things and between edible and inedible things, etc. In respect of behavioural consequences, it must be capable of operating a time line; it produces an action and it, a little time later, experiences an effect. The rat must also be capable of remembering and associating the appropriate action-effect groupings. Theoretically, an action must necessarily occur prior to its experienced and cognitively understood consequences if it is to be treated as a ‘stimulus’ for that consequence. Therefore, by definition, the rat’s behaviours, depicted by the symbol ‘R’ in the ‘S-R’ schema, cannot theoretically be dependant upon their consequences, depicted by the ‘S’ symbol, if the conceptual framework we are using to interpret the empirical data is based on a classical Newtonian uni-directional deterministic flow of causal energy/work (cause-effect). Rather, consequences, if they are to influence future actions must do so by utilising the information that past actions provide. This means that they must function as an information feedback loop which operates as a component of a behavioural control system. Such a system, as we have evolved in our frontal lobes, enables a sentient being, given the perceived exigencies of its circumstances, to adjust its computations as it plans for future actions so as to more effectively and/or efficiently achieve the ends or needs it happens to be intent upon, or which it perceives as having been imposed upon it, at the time. It would therefore, appear that behaviourist theory has proposed a logical impossibility. Given that the rat has to produce behaviours (the ‘R’) prior to experiencing a consequence (the ‘S’) we have a uni-directional, deterministic cause, the ‘S’ which acts upon the rat before the rat is aware of the ‘S’s existence. So ‘S’ is supposed to act as a cause before it has a physical existence in the physical world. And this is empirically impossible. An alternative, logically tenable, interpretation of the ‘Law of Effect’ is that provided by an information processing conceptual structure. If the ‘Law of Effect’ is situated within such a conceptual framework then the proposition makes logical sense. However, if an information based control system type of causal model is utilised, in which data regarding the consequences of an on-going series of actions is being fed back into the behavioural output system via computations carried out by a control system, thus providing the rat, or any other sentient being, with the capacity to self-monitor, inhibit behaviours judged, according to some set of criteria, as being counter-productive and then select alternative, more appropriate behaviours from an existing repertoire and activate them; then, unfortunately the metaphor underpinning the application of RCT methodology to psychotherapy efficacy research breaks down.

The point of this argument is that the conceptual framework which informs the assumptions and the logic upon which RCTs are based has not led, and is not capable of leading, us to develop a clear statement of the underlying mechanism of action by which any particular technique utilising a conversationally based transactional approach to psychotherapy actually facilitates therapeutic change. We have not developed a model of how our basic tool, transactional conversation, facilitates the changes that people themselves make in their own emotional, cognitive and behavioural pre-dispositions. Methodological Behaviourism, as a research strategy, is not logically structured in a manner designed to explore issues of process. That does not mean that we should not use RCTs as a pragmatic, rough-and-ready screening tool to determine whether ‘x’ packaged technique or approach is a more or less useful tool
for certain people as they work at making changes in their lives. However, as the complex mental activity of thinking, which involves emotional/cognitive computational processes and which gives rise to emotionally distressing states of mind, lies outside the ambit of RCT methodology, it is important that we not blinker ourselves any longer. There are, after all, many other useful tools available out there in the psychological and neuroscientific literature.
REFERENCES


