Rule-Governed Behavior and Psychological Problems

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Abstract

The term rule-governed behavior (RGB) was first coined by Skinner (1966) to refer to behavior essential to complex human abilities. The traditional behavioral account of rule-governed behavior presented some difficulties in describing how these abilities are formed and altered. With the advent of recent findings within the theoretical approach referred to as Relational Frame Theory (RFT), the former difficulties are at present being overcome. RFT is providing a comprehensive understanding of behavioral problems as found in diverse psychopathologies. The present paper addresses first the basic assumptions of RFT in relation to rule-following. Then, the three types of RGB, pliance, tracking and augmenting are presented. Finally, we describe the problems that can emerge from the different types of RGB, with a special emphasis on the role of ineffective augmenting as the basis of those psychological problems characterized by the occurrence of deliberate efforts to avoid certain thoughts, feelings and the like as the primary coping strategy to live which, in turn, produces paradoxical effects.

Keywords: rule-governed behavior, self-knowledge, pliance, tracking, augmenting, transformation of functions, Relational Frame Theory, verbal regulation, psychological disorders.

Resumen

El término conducta gobernada por reglas fue acuñado por Skinner (1966) como el modo de referirse al tipo de conducta esencial en humanos. El acercamiento conductual tradicional a la conducta gobernada por reglas tenía ciertas dificultades para llegar a la comprensión de estos comportamientos complejos. Los hallazgos recientes dentro de la aproximación teórica conocida como Teoría del Marco Relacional (TMR), están permitiendo que esas dificultades puedan ser, en parte, superadas y, se disponga de una comprensión ajustada de los problemas psicológicos que definen la diversa psicopatología. El presente artículo se centra, primero, en las asunciones básicas de la TMR respecto al comportamiento de seguimiento de reglas. Luego, se presentan los tres tipos de conducta gobernada por reglas, *pliance*, *tracking* y *augmenting*. Finalmente, se describen los problemas que pueden emerger desde estos tipos de conducta, con un énfasis especial en el papel de la regulación tipo *augmenting*, como regulación que vendría a definir los problemas psicológicos que se caracterizan por un deliberado y sistemático esfuerzo para escapar, y evitar, ciertos pensamientos, sentimientos, y recuerdos, siendo ésta la estrategia de afrontamiento esencial para vivir que, sin embargo, produce efectos paradójicos.

Palabras clave: conducta gobernada por reglas, auto-conocimiento, transformación de funciones, Teoría del Marco Relacional, regulación verbal, desórdenes psicológicos.

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A behavioral account of human phenomena ultimately has to come back to what is called the three term contingency comprising an antecedent condition, responding and its consequences. Consequences following responding in particular conditions will affect the probability of all the responses in the same operant class as the one just reinforced, which will be emitted again if similar antecedents are present. This type of analysis is quite obvious when the behavior to analyze is a discrete response like reaching out to grasp a cup of coffee or stepping back to avoid being hit by a car. But what about more complex acts like constructing an airplane or figuring out how to convince someone of your affection?

In an attempt to explain complex instances of human behavior, behavior analysts have used the concept of rule-governed behavior or instructional control since it was for the first time utilized by Skinner (1966). Put simply, it seems that certain antecedents may function as rules or instructions and affect the behavior without the apparent intervention of shaping contingencies. For example, upon the instruction "Put on your coat and then you will be warm," the child may put on his coat without further contingencies; or upon being told "If you want to convince him of your love, spend more time with him," a girl may make the proper arrangements in her schedule so as to have more time for her loved one. Rules as these are constantly given to others and to ourselves, and tie nicely to the basic formula of antecedent, behavior and consequence.

The rule, playing the role of antecedent, specifies a behavior (putting on a coat) and a consequence (being warm). According to Skinner's formulation, the rule functions as a contingency specifying stimulus. In accordance to this, rules could then be considered as discriminative stimuli. This conclusion is problematic, however, as other authors have already recognized (Parrot, 1987; Schlinger, 1990; 1993; Zettle & Hayes, 1982). Schlinger utilizes the following example (1990, p.80): "When the timer goes off, put your pencil down." If the rule is followed, in what sense is the rule a discriminative stimulus? How are we going to deal with the fact that the rule in itself does not evoke the behavior of putting the pencil down? Is the sound of the timer, then, the discriminative stimulus for putting the pencil down? This is also problematic as the sound of the timer did not acquire its function from a direct history of differential reinforcement.

At the same time it seems obvious that rules like the above do have an important function in controlling human behavior. Schlinger uses the term function-altering stimuli to refer to rules. In the example above, the rule alters the function of the timer so that it going off becomes a discriminative stimulus in that situation, even in the absence of the typical history of differential contingencies that this requires. This effect is similar to what is often referred to as an establishing operation (Michael, 1982; 2000) or an establishing event. Back in 1990 when Schlinger wrote his paper, the conditions under which a rule would acquire such function-altering functions were unknown. At present, however, there is a whole set of data that could explain how this happens.

RFT Allows for a Better Understanding of Rule-Governed Behavior

For the last twenty years, a growing body of experimental data has emerged that sheds light on the questions raised above. Considering the basic principles of verbal

behavior and the research on rule-governed behavior, Relational Frame Theory (RFT) was developed to account for such data. It is beyond the scope of the present paper to describe the emergence of RFT and its basic assumptions in depth (see Barnes-Holmes, Barnes-Holmes, & Cullinan, 2000; Hayes, Barnes-Holmes, & Roche, 2001; O'Hora & Barnes-Holmes, 2004), so we will just highlight the more relevant aspects to take into account when approaching rule governance and psychopathology.

In short, RFT holds that, early during the normal development of language abilities, humans learn to relate stimuli arbitrarily, which soon becomes a generalized operant response (Healy, Barnes-Holmes, & Smeets, 2000). Through multiple exemplar training, the contextual cues for relating (e.g. same as, opposite of, more than, better than, part of, etc.) are abstracted and then arbitrarily applied to new stimuli. That is, the child will soon be able to relate stimuli which do not share any formal property, and thereby, stimuli which have never been actually related in his learning history will become functionally effective. Which functions are established will be a matter of what the social context promotes (Hayes *et al.*, 2001; Luciano, Valdivia, Cabello & Hernández, in press). What is crucial here is that the arbitrarily established relations will, in turn, alter stimulus functions. Being told that many people in the neighbourhood are suffering from typhoid, which spreads through badly prepared chicken, places eating the piece of chicken I have in my hands into a relation of coordination with something aversive (i.e. getting sick). That is, the chicken acquires stimulus functions (for me, in that context) it did not have prior to hearing this series of sounds ("many people in the neighbourhood etc."). This way, humans learn the ability to "move around" stimulus functions at social whim. The example just presented describes an instance of relational behavior that is called relational framing, and the different ways stimuli are related are called relational frames, as a way to express the fact that anything can be framed relationally as soon as the child acquires the basic relational operants. Beware, though, that the term frame is used as a metaphor to talk about a particular kind of human behavior (there are not such things as frames hanging around).

The most basic relational frame, established first in language training, is coordination (defined by the relational cue "same as" or similar, to mean that one event stands for another). Others are opposition (the opposite of), distinction (different to), spatial (above/under), comparison (better/worse, large/small), hierarchical (X is part of Y), temporal (before/after), causal (if-then) and deictic frames (I/here/now vs. you/there/then). Although the evidence is scarce (see the edited book by Rehlfeld & Barnes-Holmes, in press), it suggests that the training of such relational frames should progress from non-arbitrary to arbitrary stimuli. For instance, for the training of the relational frame of comparison, stimuli like cups of different sizes, objects at different temperatures, boxes with more or less things inside, and so on, may be utilized to train responding to the cues "bigger/smaller than," "colder than," "more/less than" during multiple-exemplars training. Once these contextual cues are used to respond properly to a new set of non-arbitrary stimuli, then they are trained in relation to arbitrary stimuli until the child responds appropriately to novel arbitrary stimuli. For instance, after training has been complete, the child should be able to respond appropriately to novel instances (others' words, movements, gestures, novel objects, persons, etc.) that were established

as "more or less… than" an event already functional in his repertoire. When fluency and flexibility in the use of relational context is achieved, we will see the child behaving in accordance with the automatic and contextual transformation of functions via such arbitrary relational responding. As well, given the appropriate relational history, any child will derive self-rules and will learn to behave according to them (Luciano et al., in press; for a complete review of the development of technology for the emergence of language abilities, see Rehdfeld & Barnes-Holmes, in press).

RFT thus holds that rules alter behavior through the appropriate transformation of functions that result from the contact with the elements included in the rule. Concretely, for a rule to influence behavior, the individual will have to be fluent in relational frames of coordination, so that the formula "stands for" something functional in his repertoire. As well, at least the comparison, temporal and/or causal frames should be present in the repertoire for the relation between the behavior and its consequences, described or implicit in the rule, to be meaningful or understood. We say implicit because not all of what may have function-altering properties matches the traditional definition of rule including the description of the antecedents, the behavior and its consequences. Consider the following example. An individual may be extremely careful when sharing personal information with other people upon being told "Watch out," or upon seeing another person acting in a certain way (even without anything being said), or in the absence of any of those being present. This is to say, rule-governed behavior occurs also in relation to implicit rules. From a RFT perspective this is explained in a relatively straightforward manner. The rule understood is not (necessarily) the rule stated. The rule understood is the rule contacted. And what is contacted is the result of the individual's particular direct and derived history that gives function to the present circumstances. Schlinger's question about how a rule may have function-altering properties is then answered within RFT by appealing to arbitrary applicable relational responding, as O'Hora and Barnes-Holmes (2004) and Valdivia and Luciano (2006) described.

It is worth mentioning here that even if a rule is understood, it is not necessarily followed. It can be understood and followed, or understood and not followed. Considering the research conducted in this area (see summary in Barnes-Holmes, O'Hora, *et al.*, 2001), provided the understanding of the rule (that is, when words in a particular context have the desired meaning), RFT stipulates four key reasons why rules may not be followed. First, the response described in the rule may not be in the person's repertoire. For example, you may understand how to produce a particular piece by Mozart, but you couldn't do it unless you received appropriate training. Second, the rule may be provided by someone with little credibility from the perspective of the listener. For example, a mother's rule will likely have more impact on a child than a stranger's, hence different functions are transformed. Third, reinforcement for rule-following may not be available. For example, a child will follow her mother's rule but not her sister's because all reinforcers are delivered by the former. Fourth, a rule may be poorly elaborated because its relational network is contradictory or incoherent with the listener's history. Consider the rule: "If you want to have loads of friends, go around insulting and hitting all your peers"

Types of Rule-Governed Behavior

The three kinds of RGB, characterised by different kinds of reinforcement history, are identified as pliance, tracking, and augmenting.

Pliance

Pliance is rule-governed behavior primarily under the control of apparent speaker-mediated consequences for a correspondence between the rule and the relevant behavior (Hayes *et al.*, 2001; Hayes, Zettle & Rosenfard, 1989; Zettle & Hayes, 1982).

Typical pliance would be a person doing what somebody else tells him to do in order to obtain his favors, assuming that this is done under the control of the apparent speaker-mediated consequences specified in the rule or instruction. The rule is called a ply. Other examples of pliance are to behave in accordance with self-rules because of a history of exemplars with reinforcement mediated by others. For example, "If I keep saying he is right, I will keep his approval" or "I will drive slowly to avoid government penalties."

Imagine a young child doing something under the control of immediate consequences, like taking down something interesting from a desk (her mother's new laptop). Her mother may want to make this behavior disappear. This might be firstly achieved by adding an aversive consequence, like taking the laptop away and asking the child to leave the room. As the child, through language training, learns relational framing, sounds may start to function as verbal stimuli, that is, as stimuli whose presence alter the function of the present circumstances by putting them into arbitrary relations. For example, a child with a particular history of relational framing will not touch the laptop upon hearing the following rules: "Don't touch my laptop, or I will make you leave this room" or "If you don't touch my laptop, I will give you a surprise later." That is, in such context, the laptop has been transformed from something to be touched to something that equals "later out of the room" or "later a surprise". As similar rules are stated and followed by socially mediated consequences, rule-following is reinforced. It is easy to see the enormous advantages of this type of behavioral control. Not only can new consequences be added socially to affect behavior but, as both behavior and consequences are specified in the rules, more remote consequences can be contacted and even override more immediate ones. And this can occur without directly contacting the consequences of behavior. A child abstains from playing with "interesting objects" indirectly contacting the aversive consequences of such playing, and/or the appetitive consequences of abstaining. The new members of the human herd continuously learn to be controlled by the remote consequences specified in the rules and delivered by the rest of the herd. Of course, this needs the appropriate relational framing of coordination, comparison, conditional, and so on. Here is where the secret of "responding to delayed contingencies" and the ability of humans to override immediate consequences, lie.

Pliance is the first type of rule-following upon which tracking will be developed. However, if pliance is not appropriately contextually controlled, it might develop into generalized pliance which will have detrimental effects as indicated below.

Tracking

Tracking is rule-governed behavior under the control of the apparent correspondence of the rule and the way the world is arranged (Hayes *et al.*, 2001; Hayes *et al.*, 1989; Zettle & Hayes, 1982). A typical instance of tracking would be the behavior of somebody walking in a particular direction upon hearing "Keep straight for a kilometre, turn right as you see a gas station and then you will see the football stadium," assuming that this is done under the control of the apparent correspondence between the rule and the actual location of the football stadium. The rule is called a track.

Tracking is established by the verbal community once a certain level of pliance is present. For example, after playing, a girl may be told "look how dirty your hands are; let's wash them so that they can be clean again." While the hands are being washed, the adult may describe how clean the hands are turning without adding any social consequence for the girl doing what she was told to do. The parent can, as this happens, help the child to make observations of natural changes and provide the relevant relational training, including frames of coordination, temporal and causal frames. The parent can say e.g., "this is dry, put water on it, and now this is ___, and ask her about what she did, what happened[1], and why this happened. When the verbal community provides the child with many different exemplars of rules which specify behavior and necessary or physical consequences that are reinforcing/punishing independently of the social consequences arbitrarily added, then the child starts having confidence in rules, in general or at least in the context of persons who are important for the child. This, then, would become the context for credibility of rules.

Augmenting

An augmental is a type of rule that instead of specifying consequences or contingencies, as the two types above (plys and tracks), changes (augments) the reinforcing value of the consequences specified in the rule. How this happens is explained with RFT as follows. A relational network[2] is put in relation with a consequence and thereby changes the "strength", or the function, of that consequence. "If you eat vegetables, you will be a big and strong boy! What do you want to eat?" Eating vegetables can be done as pliance. The rule then implies consequences contingent upon following rules as such. It can also be done as a result of direct experiences of eating vegetables, which would not be rule-governed behavior at all but contingency-shaped. But if the child follows the rule "eating vegetables to be a big and strong boy or a nice and good boy," then he is augmenting. Augmentals do not only specify contingencies that have not been experienced and now are contacted, but also consequences that are abstract and do not have to be directly contacted to exert control over behavior. Humans can act on rules stating consequences that will appear after death, which by definition no one yet alive has contacted, or are too abstract to being contacted directly, such as "development of justice." Note that this kind of rule following is tied either to pliance or, as in the case above about eating vegetables, to tracking. Augmenting can be described as a separate unit but the way it actually functions is by intervening in tracking or pliance, by

augmenting or de-potentiating available consequences. It is important to point out that the alteration of functions might permit a person to behave in a particular way completely different to another person, even when both might have the necessary repertoire for any transformations of function. But the culture and the type of rule-following previously established are crucial (see for detailed information Luciano *et al.*, in press).

In the next sections we will put some emphasis on the problematic effects of augmenting. But it is likewise important to note the tremendous flexibility this kind of behavior opens up. Acting for long term, abstract and desirable consequences is a hallmark of what we, in everyday language, mean by being human. It is by this ability we can "stand for what is important for us in life," and pursue what we value. So the ability of augmenting is for good and ill.

The Curse of Rule-Following

It is easy to see the potential advantages that a consolidated repertoire of rule-following holds. Humans learn to delay their responding and deal with events before they are contacted. In other words, long behavioral sequences can be performed, and consequences either distant in time and/or space, or extremely abstract, can be acted upon. The ability of rule-following seems to be the most general function of verbal behavior (Catania, 1998). But this powerful force also has a dark side.

The most obvious and best documented problematic effect of rule-following is what has been called insensitivity to contingencies. Rules can override direct contingencies. And this, which is the very essence of rules by allowing delayed responding, is not always advantageous. A number of studies have been conducted on this phenomena (for details see Hayes, Brownstein, Zettle, Rosenbarb, & Korn, 1986; Matthews, Shimoff, Catania, & Sagvolden, 1977). The experiments typically proceed as follows:

Participants are presented with a simple task, like pressing a certain key only while a lamp is lit. A group of participants is given specific instructions on when to press the key in order to get reinforcement ("only when the lamp is on"). The other participants are not given any instruction, but they have to figure out how to press the key by trial and error. The advantage of being given the rule is obvious: the participants who receive the rule start earning points quicker than the others. When the rate of responding is consistent in both groups, however, the contingencies are altered without warning the participants of this, so that in order to get points, now participants have to press the key in a different way. Participants who were given the rule consistently show greater difficulty than the others to adjust to the new conditions. In other words, the rule that was once effective now is working as a hindrance not letting the participants being sensitive to the new contingencies. Most people could report this effect in their daily life, and most clinicians will recognize the resemblance between this lab effect and the behavior of most of their clients. We keep doing things that do not work because "it should work." We keep arguing to defend our points "because we are right" even though the consequences of the argument are not really what we want. We struggle to forget what we cannot forget because "it is healthier to forget awful things like that."

This leads us to the main errand of this article: to shed some light on how rule

governed behavior, understood from the perspective of RFT, participates in what is usually called psychopathology (see also Hayes *et al.*, 1999, 2001; Luciano *et al.*, 2004; in press; Wilson, Hayes, Gregg, & Zettle, 2001).

Psychological Problems Resulting from Rule-Governed Behavior

For didactic reasons we will go through the separate kinds of RGB under separate headings. During the course of normal development, however, they interact with each other in a not necessarily orderly way. Especially relevant is that augmenting will interact with the two more basic forms altering the functions of the present contingencies thus yielding psychological traps at times.

Problems with Pliance

The insensitivity described above underlies problematic pliance. The person who continuously seeks reinforcers and avoids punishers by pleasing others, i.e., a person who is primarily controlled by socially mediated consequences, will have problems to contact other reinforcing and/or aversive consequences. For example, a person who goes to museums primarily because it is what intellectual people should do, or because it gets him closer to someone special, may not learn and/or enjoy the experience of the art work. Consequently, many areas of his/her experience will be "blocked." When this type of verbal regulation is predominant in the repertoire of the individuals, problems emerge because consequences provided by others are not as predictable and controllable as other sources of reinforcement. That is, a person may love predominantly for being loved in return, but this will not always be the result. He may listen to others primarily because he wants them listen to him, and this will not necessarily be the result. If he approaches someone seeking for continuous approval, he will feel rejected in return more than once, etc. The most salient characteristic of the individuals showing generalized pliance is their sensitivity to social whim, which is also the case in counter-pliance. An example of that would be when an authority says "I would like you to do that" and then, you do the opposite. Although the topography of the behavior is contrary to what is stated in the rule, the controlling contingencies can still be the same, i.e. having social approval or avoiding/escaping socially mediated consequences. Thus, functionally speaking, counter-pliance is a case of pliance, and it will become a problem if generalized.

The main harmful consequence of generalized pliance is that the transition to tracking will be hindered (Hayes *et al.*, 1998; Luciano *et al.*, in press), and the maintenance of pliance will generate sensitivity to the consequences provided by -and through- others. Consequently, this would prevent sensitivity to direct consequences of behavior. So, being trapped by generalized pliance means that no consequences are important and/or contacted other than those mediated by others. That is, consequences affect behavior just as a result of being mediated by others.

Following the explicit or implicit rule "you ought to comply with what others think is good for you so that they are pleased with you" as the primary and final rule in life, may lead the individual to put his life in others' hands, with the main problem

being that the result of his behavior might not be what he is looking for. Whether this becomes a problem, or not, will depend on how successfully he gets the others' approval. For good or for ill, and given the variety of social circumstances the person will be exposed to, it is most probable that he will not have the experience of "being approved by others" as much as needed. Consequently, he will be trapped in needing that, behaving to get that, not obtaining it, and then more of the same all over again. The likely result is a very restricted life and poor contact with many other potentially reinforcing consequences. In other words, potential reinforcers that would need tracking to be contacted are blocked. That type of problem is a common clinical problem, described at least since the days of Freud. In therapy, generalized pliance can be detected when a client primarily and in a non flexible way looks for "what the therapist wants." Counter-pliance (resistance) is just another form of the same functional problem.

To understand how this way of behaving becomes a problem, we need to understand the interaction between generalized pliance and augmenting. Augmenting can contribute to the perpetuation and extension of the former. That is, generalized pliance usually occurs under the control of abstract, verbally constructed consequences related to the socially mediated consequences. This will be further elaborated when addressing the problems with augmenting.

Problems with Tracking

The simplest form of tracking involves a track specifying a direct contingency, that is, a behavior and a necessary (that is, non-arbitrary) consequence. The behavior is performed and the consequence is contacted. This way, tracking is strengthened and the individual's behavioral repertoire increases. Tracking may also involve long term consequences, like getting high grades at the end of the semester. This augments the reinforcing value of the direct consequences following particular acts, like submitting assignments on time, attending classes every day, etc. This is an example of how augmenting interacts with tracking. However, tracking may become problematic in several circumstances (Hayes *et al.*, 1999). One is when tracking is applied to contexts where it cannot work. For example, take the rule "I will work hard to be spontaneous." By definition, being spontaneous cannot be under instructional control. Said another way, if a person behaves following the rule "I have to be spontaneous" then he will not obtain the feeling of being spontaneous in return. Tracking can not work when the behavior and consequences specified in the rule are incompatible with rule following as such. It is like following the rule: "you should not follow rules."

Tracking can also lead to problems when the track is inaccurate and therefore rule-following does not lead to the specified consequence. For example, let`s consider that the rule promoted is that "the process of quitting smoking does not involve any discomfort." A critical point here is that following such inaccurate rules should typically not maintain over time as long as there are no effective consequences supporting such rule-following. The actions taken in relation to inaccurate rules, however, can become a trap. Consider, for example, the rule "in order to recover my mobility after an accident, I must avoid any pain." The individual will therefore act in order not to feel pain and

this might prevent him from experiencing that the short and long term consequences specified in the rule (not feeling pain after an accident and recovering from an accident) are not temporally coordinated. In addition, acting in order not to feel pain will be negatively reinforced. As well, the consequences derived from doing what is "right," according to the relational network that has been established between recovering and the absence of pain for this particular individual, will maintain this type of tracking.

Summarizing: the problems derived from tracking relate to contact with the short term consequences specified in the rule, like not feeling pain upon not doing exercises. However, given how the world is arranged, pain is part of the recovery process after an accident, and if a person behaves according to a rule saying: in order to recover, you will not need to go through pain; then tracking of reinforcing short-mid term consequences (no exercise-no pain) will block the tracking of long term consequences (doing exercise, then pain, then recovery), and the result will be less recovery in the long term. This is commonly called "strange loops," which means that effective tracking in the short run is not effective in the long run. This, in turn, can strengthen tracking the short term consequences stated in the rule as the rule inaccurately coordinates the short term consequence with the long term consequence of recovering. The reinforcing value of this is added to by the rewarding consequence of "doing right."

This paradoxical effect is a very central process in most clinical problems, for example, in anxiety, depression, and addictions. As an example, take a person suffering from social anxiety. When behaving in accordance with the rule "I cannot go out because then I'll feel very anxious," the person will correctly track the short term consequence of not feeling social anxiety upon staying at home. If maintained over time, however, tracking this kind of rule will have an opposite effect, as social anxiety is strengthened and the person will feel more depressed. Another example would be a person addicted to alcohol. Tracking the rule "I will feel better after drinking" is effective in the short run. But maintained over time, the person will continue drinking, his problems will not go away, and the thoughts and feelings about his poor abilities to manage his life will most likely strengthen, which would be an example of not tracking long term destructive consequences. In other words, the person will be trapped by his poor repertoire of tracking long term consequences.

A closer look at clinical situations like the ones presented above reveals that negative reinforcement, even though present, is usually not the whole story. Just as for pliance, augmenting plays a critical role in the maintenance of ineffective patterns of tracking. That is, as briefly stated before, "being right" (or behaving in accordance with relations among events which are established and derived throughout the personal history), transforms the functions of ineffective tracking, leading the person to keep behaving as he "is supposed to" despite the actual short-long term consequences of such rule-following As we will address in more detail in the next section, individuals stick to rules that do not work, like the ones controlling the deliberate efforts to stop feeling anxious, depressed, stupid, detached, etc, and do it pursuing a goal in one particular direction, or pursuing something else. The potent role that this direction plays in rule-following is related to problematic augmenting.

Problems with Augmenting

There is a common aspect between augmenting and pliance: they are susceptible to social whim. That is, the verbal networks that make augmenting possible are arbitrarily constructed by the social community. The central problem of augmenting is that when it interacts with pliance and tracking, the insensitivity to changing contingencies increases. In other words, the more abstract the controlling consequences are, the harder it is for direct consequences to affect behavior.

Let's go back to the discussion on the problems with pliance. We mentioned that the interaction of pliance with augmenting contributes to the perpetuation and extension of the former. Even though some individuals will seek approval from others as a way to obtain more concrete sources of reinforcement, generalized pliance usually occurs under the control of more abstract, verbally constructed and socially mediated consequences. For instance, the abstract consequences "being a good Christian," "being a good citizen," "being a lovable person," and the like may have been established as the ultimate rewards in the repertoire of an individual. Also, such rewards may have been linked to more specific actions like doing what others do, saying what others say, doing what the individual is supposed to do as a good X, never saying "no," etc. This history, which strengthens an arbitrary relation of coordination between "being a lovable person" and complying, will transform the consequences of not complying into punishers as long as not complying is established in a relation of opposition to "being a lovable person," as the ultimate reinforcer or valued direction (to see the process of linking to abstract consequences, see previously augmenting paragraph). This type of interaction can explain the problematic augmenting based on generalized pliance as, for example, when a person behaves systematically according to the self-rule: "in order to live, I must feel well and I feel well when nobody criticizes me and when I get the approval of the people around me." This is the result of complex relational framing where (1) certain feelings or thoughts about oneself (i.e., "being a bad person") are framed in opposition to acting towards particular goals, (2) these goals are framed in coordination to feeling well, and (3) feeling well is established as the necessary component (If-then framing) to reach what a person really values in his life (see Hayes *et al.*, 1998; Luciano *et al.*, in press).

As another example take a depressed person who ruminates over past events. When asked whether "thinking over" helps him find the solution to his problems, he usually responds negatively. Still, he continues doing it. Negative reinforcement is most likely at the basis of this behavior, to the extend that ruminating may prevent him from facing painful thoughts in the short run. But negative reinforcement is not the only contingency involved. Ruminating is most probably part of problem solving strategy as a behavioral class. And problem solving is "what one should do for problems to disappear." Consequently, and once again, the ruminative behavior of our depressed person is reinforced by "doing what I am supposed to do to feel well" (i.e. "I am right thinking over"). What really matters at this point is to figure out why this type of problem solving is so potentiated in a particular individual. When asked why it is so important to ruminate, the person usually states that it makes him feel better; and when asked why

it is so important to feel good or better, the person may state that only by feeling good can he pursue what is important for him. We can observe, then, that the rule "I have to stop depressed feelings to feel good, and I need to feel good in order to live" functions as an augmental with several transformation effects. On the one hand, it transforms the avoided thoughts into even more aversive contents since they are established in opposition with pursuing valuable goals (e.g. "they are bad for life;" or "while I feel depressed, my life cannot be fulfilled;" or "my life is stuck because I am depressed") (Luciano *et al.*, 2004; Páez *et al.*, 2007). These rules may have more detrimental effects when the person does not differentiate between the person who is having such thoughts (or any other private contents), and the actual thoughts as the contents that the person experiences given certain circumstances (Barnes-Holmes, *et al.*, 2001; Luciano *et al.*, 2004). On the other hand, it potentiates the deliberate efforts to get rid of the painful private contents as the right thing to do with the ultimate goal of having a fulfilling life.

Take a person who suffers from hallucinations. Let's assume that this person follows the track "If I stay in bed I will not hear voices." When exploring why it is so important not to hear voices, reasons like "better managing my life," or "stop thinking I'm going crazy," may arise. Again, when very aversive thoughts show up, a self rule might be derived like "I am a normal person and these thoughts have nothing to do with me, how is, then, that these voices are happening to me?" This might have the effect of putting the thoughts outside of oneself and this transformation will reduce the aversiveness of the experience.

Even more self-rules will likely be derived. For example, the rule "a healthy person who is able to manage his life, cannot possibly hear voices" transforms voices into very aversive contents because they are established in opposition to being healthy, to being a normal person. Hence, the transformation potentiates the deliberate efforts to get rid of them so as to eventually feel like a healthy person. A person diagnosed with dependant personality disorder who is primarily regulated by a rule like "I cannot make decisions by myself" will engage in deliberate efforts not to have the feeling of lack of support, for instance by acting out or by withdrawing socially. Lastly, imagine a person with phobias. Her avoidance efforts may well be controlled by a rule like "in order to be successful in life, people have to be free of fears and worries." This rule enhances the aversive properties of her phobias, in a relation of comparison with simple fears, and makes sense of the deliberate efforts to get rid of them, thus strengthening such behavior.

Augmenting lies close to what, in colloquial terms, is referred to as assumptions, which can be understood as more or less complex relational networks that alter the ability of events to function as effective reinforcers or punishers. Augmenting has been regarded as the most advanced form of rule-governed behavior (Hayes, Gifford, & Hayes, 1998), and as such, it interacts with the other two types of rule-governed behavior to make sense of the resulting behavior. For the good and for the bad, thus, augmenting seems to be central in the emergence and maintenance of psychological problems under the rubric of psychopathology.

Rule-Governed Behavior and Destructive Experiential Avoidance

Experiential avoidance has been implicitly addressed in each of the examples described throughout the paper, and we turn now to its more detailed conceptualization. Experiential avoidance has been defined as the occurrence of deliberate efforts to avoid and/or escape from private events such as affects, thoughts, memories and bodily sensations which are experienced as aversive (Hayes, Wilson, Gifford, Follete, & Strosahl, 1996; Luciano & Hayes, 2001). The effect of such deliberate efforts is, however, paradoxical. In the short run, control efforts are reinforced, but in the long term, the feared private events increase while life becomes entangled and, consequently, life satisfaction gets reduced. There is a considerable amount of data suggesting that destructive experiential avoidance is central to much psychopathology (Hayes *et al.*, 1996; Chapman, Gratz, & Brown, 2006).

To understand how experiential avoidance becomes so central to human beings, we first need to go back to one of the most basic components of verbal behavior, that is bidirectional responding. When facing a predator and running away in looking for shelter, an animal learns that the presence of a certain predator evokes running in a certain way for a certain shelter. Once safe, the shelter will acquire certain stimulus functions for the animal, none of them, however, related to the predator. In the case of animals, for this to happen, events should be reversed (i.e. the shelter should precede the predator). In the case of language able humans the situation is different. The shelter will acquire safety functions and also, it will acquire the functions of the predator. That is, humans are capable of bidirectional responding (for a more detailed account see Wilson *et al.*, 2001), which is one of the characteristics of relational frames. Once bidirectionality along with the different types of rule-governed behavior are established, the trap of experiential avoidance opens up. Certain kinds of arousal, affect, images, memories, etc., that are elicited and derived by the occurrence of a somehow threatening stimulation will sometimes potentiate and sometimes establish aversive functions due to bidirectional responding.

Consequently, the threatening situations become the target of avoidance and so does the private events verbally related to the event. A frame of coordination between the threat and certain private events, as well as comparative, temporal and causal framing must be established in the individual's repertoire for this to happen. And since these repertoires are acquired during the normal development of language abilities, the transformation of the functions of private events into aversive contents, if not inevitable, is at least extremely likely to occur in language capable humans. When rules are established (given by others, or self-derived) which state the incompatibility between private events experienced as aversive and a fulfilling life, they will function as augmentals transforming private events into even more aversive contents, as long as having a fulfilling life is reinforcing for the individual. In this way they will enhance the reinforcing properties of the deliberate avoidance efforts. Experiential avoidance is now in effect.

As the ability to relationally respond gets more and more complex, more and more events enter in relational frames with other functional stimuli. That is, a whole diversity of thoughts and feelings can enter frames of coordination with feared ones,

or frames of opposition with desired outcomes, and therefore become the target of avoidance efforts. However, this potential trap can be managed if the person learns to discriminate the relative utility of his/her private events in terms of attaining meaningful outcomes. This necessarily involves the ability to verbally discriminate between the I as the context for what is being experienced, and these experiences (thoughts, feelings, memories, etc) as only such experiences (see for detailed information on deictic framing, Barnes-Holmes, Hayes, *et al.*, 2001; Luciano *et al.*, in press).

When these verbal discriminations are not learned, the private events with aversive functions become the target of avoidance. This is problematic primarily because our ability as humans to control them is very limited. In other words, the rules about controlling the emergence of private events and how to stop them do not work in the way the rules prescribe. Secondly, because the harder you try and the more varied are the control efforts, the more the individual will contact -in the mid and long run- what they want to get rid of. And lastly, and most importantly, as the individual engages in deliberate avoidance efforts, other behaviors which were fundamentally controlled by positive reinforcement are blocked, rendering in an unfulfilled life in the long run.

Thus, it seems that of the three types of verbal regulation, augmenting is the trickiest one, as long as it is through the cultural rules about what it means to have a healthy and fulfilling life that the private events ultimately transform into aversive contents and the deliberate avoidance efforts to control them transforms into the only way out. However, it is not really a way out. Following such rules become paradoxical because private events derive regardless of the individual's will, and deliberate efforts at avoiding or escaping them produce rebound and extended effects. These efforts become the central aspect of life, while other actions controlled by long term positive reinforcement are abandoned. Describing the therapeutic approach derived from this account of psychopathology goes beyond the scope of the present paper (see Acceptance and Commitment Therapy -ACT- in Hayes, Strosahl & Wilson, 1999; Hayes & Strosahl, 2004; Wilson & Luciano, 2002). We will just mention that the first key issue in undermining problematic rule-following is experiencing the result of such a spiral of unsuccessful control efforts in relation to personal values. That involves one more key issue: the clarification of valued trajectories that will set the stage for acceptance of private events. This will only be possible by learning to verbally discriminate between myself as context of the experience, on one hand, and the thoughts and feelings that show up, on the other. Said another way, by experiencing the I located HERE and NOW while any thought/feeling experienced is located THERE and THEN. This verbal discrimination is established by experiential exercises that will set up the conditions for accurate long-term tracking and appropriate augmenting. That is, rule-following where the private contents are no longer something to fight against, but are part of the way towards the effective long-term and abstract reinforcing consequences.

Summary and Conclusion

Rule-governed behavior is the essential human behavior. The most basic form of rule-governance is pliance, which enhances social control, promotes behavior controlled by long term consequences, and sets the stage for the second form of rule-following in

the course of the child development, tracking. The main advantage of tracking over pliance is that it further promotes behavior controlled by long term consequences, beyond the socially established. The prize humans have to pay in return to the enormous benefits of rule-governance in their daily life is insensitivity to changing contingencies. For instance, there is a risk for generalized pliance which could strengthen the individual's susceptibility to social whim, and hence interfere with the proper transition to tracking. And this is where augmenting comes to scene, adding flexibility to behavior. By augmenting, the individual may pursue more and more remote and probabilistic consequences which will alter the reinforcing and punishing properties of present contingencies. The prize humans have to pay in return to the advantages of augmenting, however, is also important: the insensitivity to direct contingencies further increases, sometimes to the point of direct contingencies "loosing their power," with the pros and cons this brings along. The destructive side of augmenting will be at the basis of the emergence and expansion of the deliberate avoidance efforts that constitute the experiential avoidance disorder. In order to counter such an effect in psychological treatment, it will be necessary to break down destructive verbal regulation. This is the path followed in Acceptance and Commitment Therapy (ACT).

NOTES

1. The guidelines for the training of the relational frames can be found in Luciano *et al.* (in press).
2. Beware, once again, that talking about "relational networks" is not to imply that there are any such objects. To talk about relational networks is to say that humans act in a particular way, relating events in a (potentially) complex way. These relational acts affect the stimulus functions of such events.

REFERENCES

Barnes-Holmes D, Barnes-Holmes Y, & Cullinan V (2000). Relational Frame Theory and Skinner's Verbal Behavior: A possible synthesis. *The Behavior Analyst, 23*, 69-84.

Barnes-Holmes D, Hayes SC, & Dymond S (2001). Self and self-directed rules. In SC Hayes, D Barnes-Holmes, and B Roche (Eds.), *Relational Frame Theory: A post-Skinnerian account of human language and cognition* (pp. 119-140). New York: Kluwer Academic/Plenum Publishers.

Barnes-Holmes D, O'Hora D, Roche B, Hayes SC, Bissett RT, & Lyddy F (2001). Understanding and verbal regulation. In SC Hayes, D Barnes-Holmes, & B Roche (Eds.), *Relational Frame Theory: A post-Skinnerian account of human language and cognition* (pp.103-118). New York: Kluwer Academic/Plenum Publishers.

Catania AC (1998). *Learning*, 4th ed. Upper Saddle River, NJ: Prentice-Hall.

Chapman AL, Gratz KL, & Brown MZ (2006). Solving the puzzle of deliberate self-harm: The experiential avoidance model. *Behaviour Research and Therapy, 44*, 371-394.

Hayes SC, Barnes-Holmes D, & Roche B (Eds.) (2001). *Relational Frame Theory: A post-Skinnerian account of human language and cognition*. New York: Kluwer Academic/Plenum Publishers.

Hayes SC, Brownstein AJ, Zettle RD, Rosenfarb I, & Korn Z (1986). Rule-governed behavior and sensitivity to changing consequences of responding. *Journal of Experimental Analysis of Behavior, 45*, 237-256.

Hayes SC, Gifford EV, & Hayes GJ (1998). Moral behavior and the development of verbal regulation. *The Behavior Analyst, 21*, 253-279.

Hayes SC, & Strosahl KD (2004). *A practical guide to Acceptance and Commitment Therapy*. New York: Springer-Verlag.

Hayes SC, Strosahl KD, & Wilson KG (1999). *Acceptance and Commitment Therapy.* New York: The Guilford Press.

Hayes SC, Wilson KG, Gifford EV, Follette VM, & Strosahl K (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology, 64,* 1152-1168.

Hayes SC, Zettle R, & Rosenfarb I (1989). Rule-following. In SC Hayes (Ed.) *Rule-Governed Behavior: Cognition, contingencies, and instructional control* (pp. 191-220). New York: Plenum Press.

Healy O, Barnes-Holmes D, & Smeets P (2000). Derived generalized responding as generalized operant behavior. *Journal of Experimental Analysis of Behavior, 74,* 207-227.

Luciano MC, & Hayes SC (2001). Experiential avoidance disorder. *International Journal of Clinical and Health Psychology, 1,* 109-157.

Luciano MC, Rodríguez M, & Gutiérrez O (2004). A proposal for synthesizing verbal contexts in Experiential Avoidance Disorder and Acceptance and Commitment Therapy. *International Journal of Psychology and Psychological Therapy, 4,* 377-394.

Luciano C, Valdivia S, Cabello F, & Hernández M (in press). Developing self-directed rules. In R. Rehlfeld & Y. Barnes-Holmes (Eds). *Applying Relational Frame Theory to the Language Disabled.* Oakland, CA: New Harbinger.

Matthews BA, Shimoff E, Catania C, & Sagvolden T (1977). Uninstructed human responding: Sensitivity to ratio and interval contingencies. *Journal Experimental Analysis of Behavior, 27,* 453-467.

Michael J (1982). Distinguishing between discriminative and motivational functions of stimuli. *Journal of Experimental Analysis of Behavior, 37,* 149-155.

Michael J (2000) Implications and refinements of the establishing operation concept. *Journal of Applied Behavior Analysis, 33,* 401-410.

O'Hora D, & Barnes-Holmes D (2004). Instructional control: Developing a relational frame analysis. *International Journal of Psychology and Psychological Therapy, 4,* 263-284.

Páez M, Luciano MC, Gutiérrez O, Valdivia S, Ortega J, & Rodríguez M (2008). The role of values with personal examples in altering the functions of pain: Comparisons between acceptance-based and cognitive-control-based protocols. *Behavior Research and Therapy, 46,* 84-97.

Parrot L (1987). Rule governed behavior: An implicit analysis of reference. In S Modgil & C Modgil (Eds), *BF Skinner, Consensus and Controversy* (pp. 265-276). Philadelphia: Falmer Press.

Rehlfeld R & Barnes-Holmes Y (in press). *Applying Relational Frame Theory to the Language Disabled.* Oakland, CA: New Harbinger.

Schlinger HD (1990). A reply to behavior analysts writing about rules and rule-governed behavior. *The Analysis of Verbal Behavior, 8,* 77-82.

Schlinger HD (1993). Separating discriminative and function-altering effects of verbal stimuli. *The Behavior Analyst, 16,* 9-23.

Skinner BF (1966). An operant analysis of problem solving. In B Kleinmuntz (Ed.) *Problem solving: Research, method and theory* (pp. 133-171). New York: John Wiley & Sons.

Valdivia S & Luciano MC (2006). Una revisión de la alteración de propiedades reforzantes de eventos en humanos. *International Journal of Psychology and Psychological Therapy, 6,* 425-444.

Wilson KG, Hayes SC, Gregg J, & Zettle RD (2001). Psychopathology and psychotherapy. In SC Hayes, D Barnes-Holmes, & B Roche (Eds). *Relational Frame Theory: A post-Skinnerian account of human language and cognition* (pp. 211-238). New York: Kluwer Ac./Plenum Pub.

Wilson KG, & Luciano MC (2002). *Terapia de Aceptación y Compromiso. Un tratamiento conductual orientado a los valores.* Madrid: Pirámide.

Zettle R, & Hayes SC (1982). Rule-governed behavior: A potential theoretical framework for cognitive-behavioral therapy. *Advances in Cognitive-Behavioral Research and Therapy, 1,* 73-117.

Received, march 15, 2008
Final acceptance, april 19, 2008