ΕΡΕΥΝΗΤΙΚΗ ΕΡΓΑΣΙΑ

Αυτοδιαχείριση υπό το πρίσμα της Ανάλυσης της Συμπεριφοράς: Θεωρητικές Αναγωγές και Εφαρμογές στη Διαταραχή Αυτιστικού Φάσματος

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Περίληψη

Η Πειραματική Ανάλυση της Συμπεριφοράς συνιστά ένα ευρύ πλαίσιο αναφοράς, με ισχυρές θεωρητικές καταβολές και εφαρμογές στην εκπαίδευση και τη θεραπευτική πράξη, οι οποίες έχουν προεκτάσεις και συνεισφέρουν στη βελτίωση της ζωής του ανθρώπου σε όλα τα πεδία δράσης και ανάπτυξής του. Μετά από μια μακρά πορεία βασικών και εφαρμοσμένων ερευνών που σχετίζονται με τη θεραπεία ή αποκατάσταση παιδιών με βαριές αναπηρίες, όπως αυτές που εντάσσονται στο φάσμα του αυτισμού, η Εφαρμοσμένη Ανάλυση της Συμπεριφοράς, πλέον, χαρακτηρίζεται ως η αποτελεσματικότερη προσέγγιση στον αυτισμό. Στόχος του παρόντος άρθρου είναι να καταδείξει την ανάγκη συνέχισης αυτής της ερευνητικής παράδοσης, όπου η βασική και η εφαρμοσμένη έρευνα εξελίσσονται παράλληλα και βρίσκονται σε συνεχή «διάλογο», ώστε η αξιοποίησή τους στη θεραπευτική και την παιδαγωγική πράξη να είναι συνδυαστική και όχι μονομερής. Για να καταδείξουμε πώς μπορεί να επιτευχθεί η σύζευξη βασικής και εφαρμοσμένης έρευνας, αναφερόμαστε στο παράδειγμα της αυτο-διαχείρισης, όπως αυτή έχει αξιοποιηθεί στη θεραπεία παιδιών στο φάσμα του αυτισμού. Η πρόταση που πηγάζει από το παρόν άρθρο είναι πως αυτή τη συνδυαστική προσέγγιση δεν μπορεί παρά να αποβεί ωφέλιμη, τόσο στην ανάπτυξη της Ανάλυσης της Συμπεριφοράς, συνολικά, ως επιστημονικού πεδίου, όσο και στους αποδέκτες των εφαρμογών της

Λέξεις κλειδιά: Ανάλυση της Συμπεριφοράς, Αυτο-διαχείριση, Διαταραχή Αυτιστικού Φάσματος

Introduction

Historically, Behavior Analysis has provided a broad context that entails both theoretical and applied work designed to improve the quality of people's lives.[1] The aim of Applied Behavior Analysis is, in fact, to improve conditions and to produce generalized understanding within a conceptual framework.[2] There is probably no other area in which behavior analysis has provided best practice, most effective interventions as in the field of early intervention for children with Autism Spectrum Disorder (ASD).[3] For more than 50 years meaningful changes have been produced within a behavior analytic research paradigm.[4] Within that history the conceptualization of therapeutic variables has gradually evolved.

As early as 1964 behavior analysts began publishing demonstrations of favorable outcomes. For example, in one of the first demonstrations, Wolf, Risley and Mees[5] showed dramatic changes in a child with autism who was hospitalized and referred for institutionalization.

Dickey ... lacked normal social and verbal repertoires. His tantrums included self-destructive behaviours such as head banging, face-slapping, hair pulling and face scratching... Sedative, tranquilizers, and restraints were tried, without success.[5](pp305-6)

The Wolf study was followed by several other studies that addressed similar cases of children for whom hope for therapeutic improvement was given up.[6]

This was probably the foundational contribution of behavior analytic therapeutic intervention; the behavior of children with autism was amenable to change through the manipulation of environmental variables. By breaking down each presenting problem into observable units and applying operant procedures, researchers showed that children made progress in all areas of deficit and excess. Those powerful demonstrations offered a new perspective in how we interpret severely disabled children. In addition, those early applications were radical in the sense that they contributed to the normalization process of the 1960's including progress for even people with severe disabilities who had previously been relegated to the back wards of asylums for the mentally ill.

The line of research was extended by Lovaas and his colleagues[7] who offered data-based case studies of several children with autism. This study was important for at least two reasons. First, it offered effective procedural variables for intervention across the many domains affected by autism. Second, it offered a general discussion of therapeutic variables in the treatment of autism. The researchers concluded that treatment should be comprehensive, begin very early, and families could be agents for change. Following this shift in emphasis, a series of studies[8-11] were produced showing remarkable changes. In recent years popular media,[12] scientific panels,[13] disciplinary bodies[14] and governmental agencies15 have recognized the effectiveness of early and comprehensive interventions. In conclusion, applied behavior analysis is widely recognized as a discipline that provides evidence-based, highly effective therapeutic interventions for people with autism. In addition, behavior analytic therapeutic and educational applications are becoming increasingly sophisticated and address not only people with severe disabilities, but also people with milder cognitive or psychosocial difficulties. Nowadays, we have a wide range of new types of interventions that teachers and clinicians can choose from and with which a great number of areas of need can be addressed.

While encouraging, there are still methodological limitations,[16] differences in the way children respond to treatment,[17] unaddressed issues facing families,[18] and debates both within and outside of the field of behavior analysis regarding therapeutic variables of importance[19]. There is also some concern that the "analysis" in applied behavior analysis is being usurped by "package" approaches to treatment and research.[20] Such tensions set the occasion for new avenues of inquiry and an opening of the field.

The purpose of this paper is to explore the literature on self-management as an example that helps us appreciate how basic questions may be posed within the behavior analytic theoretical framework. At its essence the science of behavior requires the capability to produce generalized behavior change, the capability to conceptualize how the change occurred, and proof with conceptually consistent explanation that the experimental variables account for the behavior change.[21] This is a foundational activity in the design of behavior analytic applications. We believe that the science of the experimental analysis of behavior has great promise if it continues to follow this tradition rather than current trends of demonstrations of therapeutic "packages" that may be effective under limited and unclear circumstances. A package, devoid of conceptual or experimental analysis, is not likely to contribute to or advance the science of behavior analysis nor to contribute in substantive ways to the amelioration of educational and psychological deficits.

Self-management was selected for yet another reason as it is a construct that has been empirically analyzed in both the behavior analytic and mainstream literature. Our ability as behavior analysts to use important constructs from main-stream psychological literature, such as self-control or self-management, and re-conceptualize them within the behavior analytic theoretical and methodological framework may, on one hand, offer a good venue toward broadening the scope of targeted variables within the behavior analytic framework, and, on the other hand, may facilitate cross-discipline communication efforts – provide opportunities for behavior analysts to address broader audiences.

Defining self-management

As of the mid 1980's the constructs of self-control and self-management had not being thoroughly examined and analyzed empirically, within a behavior analytic framework, despite the fact that Skinner had introduced those constructs about 30 years ago.[22] The terms self-control and self-management will be treated as synonymous for the purposes of this article since the two terms have been used interchangeably historically. The term self-management will be mostly used as it is a term that has been more clearly and consistently defined. There have been suggestions to treat the two terms separately, yet, this issue is beyond the scope of the present article. For example, Newman and his colleagues[23](p86) propose that "self-control should be used for procedures that involve overcoming disparities between the effects of long-term and short term consequences, while self-management should be reserved for the more general program of applying operant principles to one's own behavior." This latter definition of self-management is consisted with Skinner's definition and, thus, widely accepted within the framework of radical behavior analysis. We may define self-management, procedurally and functionally, as the personal, intentional, and systematic application of behavior change strategies that result in the desired modification and maintenance of one's own behavior.[24] Furthermore, when referring to self-control, Skinner claims that a person "controls himself precisely as he would control the behavior of anyone else – through the manipulation of variables of which behavior is a function".[22](p228)

Is self-management a self-mediated process?

Don Baer, Richard Mallot, and other scholars introduced questions pertaining to the mechanisms responsible for the effects of self-management and other self-mediated processes some of which continue to remain unanswered. For example, we don't have an empirically validated answer to Baer's very interesting and reasonable question regarding whether self-control can be understood as simply the provision of stimuli that form complex chains of behavior, or if it needs to be interpreted as a separate learning mechanism that functions as mediator for behavior

change.[25] Baer suggests that if self-management, self-instruction, self-monitoring, or other self-mediated processes function indeed as mediators for change, then such processes ought to occur even in the absence of experimenters who may initially set the occasion for self-mediated behavior to occur. An empirical demonstration of such independent occurrences of self-mediated behavior would suffice as proof that such behavior is distinct from chained responding and that it mediates responses that may be followed by "delayed, indirect, or inefficient contingencies"[25](p217). As such, self-management and other self-mediated behavior has great value both theoretically as well as in terms of applications in therapy and in education. Examples will be offered in the following sections to fully appreciate the importance of self-management as a mediating process.

Self-management and rule-governed behavior

Richard Malott[26] takes a similar stance claiming that self-mediated responses may be viewed as critical for normal development, since they allow humans to tolerate long delays in the delivery of reinforcement contingencies. He offers the example of physical exercise, which, although having great value for our well being, its benefits on our health are far from immediate. Understanding and abiding to rules , such as "if I exercise regularly, I will be in better shape", may be seen as a self-mediated process that increases the possibility of engaging in activities that are not immediately reinforced, yet produce outcomes that are very important to our well-being. As Skinner[22] points out, self-control offers itself as a procedure that may produce change in a certain type of responses: those that have conflicting consequences – consequences associated with both reinforcing and punishing contingencies as is the case of physical exercise. In the long-run exercise produces reinforcing outcomes (i.e., being in good shape), whereas, the immediate outcome maybe muscular pain, feeling tired, and other punishing consequences. Self-management procedures may also be efficient in mediating behavior not only in terms of its conflicting consequation, but also in terms of enhancing the weak reinforcing properties of its consequation.[26] For example, in following a diet we may use self-mediated reinforcement contingencies. Weekly weight reduction may be too low and thus a weak reinforcement contingency, ineffective in maintaining the desired response of following the prescribed diet. This weak contingency may be enhanced by self-monitoring of daily food intake that is self-mediated and may be considered reinforcing since the person on a diet manages to comply with his dieting schedule. Following a rule (e.g., "it is important to follow my diet"), in other words, may account for the reinforcing properties of the self-mediated procedure.[26]

Learning to bring one's own behavior under the control of rules is very important for responses that are associated either with weak or delayed reinforcement which makes the teaching of self-mediated behavior very important. When it comes to people with disabilities, given their difficulties in tolerating delayed reinforcement and in acquiring autonomous functioning, teaching self-mediated behavior becomes imperative. Reinforcement contingencies that are greatly delayed are often ineffective in producing behavior change. Thus, to achieve important outcomes, such as physical health, or a pollution-free environment, we need to consider mediating contingencies, such as self-management or other self-mediated processes that may signal access to reinforcement contingencies and at the same time encourage the self-managing organism to tolerate delays in the delivery of reinforcement.

Accounting for self-management from a behavior analytic perspective

Another conceptual challenge that behavior analysts are confronted with in their attempts to explain such complex human behavior as self-management has to do with the provision of a complete account of such complex behavior. Specifically in the case of self-management, the question is whether the reinforcing agent for self-management is social or private. Does reinforcement come from an agent external to the individual who self-manages or does it come from within the same individual. From a radical behavioral standpoint, there could be no other explanation for change in operant behavior other than social, environmental events that may account for it. Thus, many behavior analysts have objected to the use of the term self-reinforcement as they consider it to be a misnomer for the operation of reinforcement delivery in instances of self-management.[28] Hayes and colleagues suggested "it would be more parsimonious to view self-reinforcement as a special arrangement of external reinforcement. Rather than attempt to explain complex behavior by referring to other similarly complex behaviors within the same individual (e.g., self-efficacy, self-reinforcement), it seems more worthwhile to identify the actual physical conditions that give rise to both".[29](pp211-12) It would be very difficult to demonstrate that reinforcement contingencies associated with self-management may not be attributed to external, social agents of reinforcement since other than for currently-operating parameters, we would also have to account for historical ones, such as the learning history of the individual engaging in self-management. In addition, separating operant (relating to environmental contingencies and being available for direct observation) from respondent (private events such as emotional reactions) learning processes, at any point in time that learning occurs, may be common practice, but it is an artifact. We

know that both operant and respondent behavior is always involved in learning. The fact that environmental contingencies are in effect during the acquisition of self-management responses does not exclude concurrent occurrences of emotional responding. In fact, a negative reinforcement paradigm offers a parsimonious explanation for the maintenance of self-management responses in the absence of an external agent: "The individual may self-manage to avoid or remove aversive consequences, either public failure and the consequences that follow, or self-reproach."[23]

Self-management and reactivity of self-monitoring

A final aspect of self-management that would be interesting to allude to and which has not, yet, been fully explored pertains to reactivity of self-monitoring and the controlling variables of reactivity. Self-monitoring, a well-studied self-management procedure, refers to an individual systematically observing his own behavior and recording occurrences or non-occurrences of specific responses. It has been demonstrated that self-monitoring produces changes in target responses before they are consequated.[30] Several series of studies have been contacted in order to investigate the mechanisms that control change. The main question pertains to two possibilities: (a) does self-monitoring simply cue the upcoming delivery of reinforcement and is the first response of the reactive chain leading to change of the target behavior or (b) is self-monitoring controlled by self-administered consequences, such as praising oneself? The first possibility leads to the conclusion that self-monitoring exerts control the same way as any other type of chained behavior. On the other hand, if the second possibility holds true, then we would have to conclude that self-monitoring leads to behavior change through a separate mechanism from the mechanism involved in chaining. Empirical investigations of reactivity of self-monitoring or other self-management processes may provide us with important findings that pertain both to theory construction as well as to applied work. Identifying parameters that may increase the probability of reactivity can help people with developmental or other disabilities.[31] For example, though self-monitoring was not designed to be a therapeutic technique, it functions as one in people with Developmental Disorders or psychosis leading to reduction of inappropriate behavior such as repetitive motor behavior or hallucinations.[30] The Mace and colleagues' study[32] with mentally retarded adults working in a sheltered workshop provided additional support to the fact that self-monitoring may enhance the effects of reinforcement contingencies, but did not function as a reinforcer when not paired with environmental contingencies. Specifically, reinforcement contingencies were effective in increasing the productivity of the participants, but not as effective as when combined with self-monitoring. Yet, self-monitoring alone, in the absence of reinforcement contingencies, did not increase productivity at all. Further investigation and replication of these results with different targets would be very interesting since it would provide additional support to the hypothesis that self-monitoring needs to be paired with environmental contingencies in order to produce reactive outcomes.

Therapeutic and educational applications of self-management

Self-management and self-control are, without a doubt, constructs that have provoked very interesting and heated arguments and debates among behavior analysts since they present a challenge as far as explaining their function as operant behavior. Aside from theoretical interest, however, self-management is of great value in therapeutic and educational practice, especially since inclusion in schools and in the community has been set as a primary goal for people with disabilities. Self-management fosters independent functioning and its use has been empirically validated.[24] In particular for people with ASD, who are often over-dependent on treatment providers and have limited generalization skills,[33] acquisition of self-management skills can be highly beneficial. In fact, self-management, due to its properties has been considered to be the practice of choice for school inclusion purposes.[34] In addition, self-management has been used extensively and successfully toward the amelioration of all core deficits associated with ASD.[35] Thus, it would be worthwhile to briefly review some applied studies that may help us investigate whether it would be worth teaching self-management skills to people with ASD. Would acquisition and use of self-management skills be effective and efficient in helping people with ASD achieve therapeutic and educational goals? And if so, how can we explain, conceptually, the effectiveness of self-monitoring?

Starting with core deficits associated with ASD, the first diagnostic criterion set by the Diagnostic and Statistical Manual-5 (DSM-5) is "persistent impairment in reciprocal and social communication and social interaction".[36](p53) This impairment presents a great therapeutic challenge since people with ASD are often not motivated by social reinforcers unless they are systematically taught to value such reinforcers. Yet, self-management procedures have been effective in enhancing the social skills of children with ASD,[37] in improving their social initiations and interactions with peers,[38,39] in increasing their responding to social invitations made by peers40 and in enhancing a variety of other social and communication skills. The effects of self-monitoring and self-management are equally beneficial in helping people with ASD to overcome deficits in the domain addressed by the second criterion of the DSM-5: "Restrictive, repetitive patterns of behavior, interests, or activities". [36](p50) Use of self-management procedures has led to reduction or extinction of a wide range of repet-

itive and disruptive behavior such as inappropriate, repetitive vocalizations,[41,42] motor mannerisms,[43] self- injurious behavior,[44] off-task behavior,[45] disruptive behavior[46] not following rules, hurting others, damaging objects and furniture[47]. In the aforementioned studies, repetitive, inappropriate, self-injurious, and disruptive behavior was targeted directly. Yet, reduction of such behavior has also been achieved as a collateral effect when self-management was used for acquisition of pro-social behavior. For example, there was a decrease in stereotypic behavior as a collateral effect to teaching social skills[39,40] and on-task behavior[48]. The benefits of self-monitoring are similar across settings, when used in the home environment,[49] in schools,[50] in the community,[51] and in the work place[52]. This is particularly important in the case of people with ASD who often fail to generalize acquired skills in their everyday life, away from highly structured environmental arrangements that are frequently provided in therapeutic or special education settings designed for children with autism. Finally, it is worth mentioning that self-management has been successfully used in teaching a great number of other skills, such as functional use of toys,[53] varied responding,[54] organization skills,[55] academic skills[56] and on-task behavior[57].

Aside from the beneficial effects of self-management in the acquisition of specific skills, it has also been demonstrated that self-management promotes generalization and maintenance of newly acquired skills[58,59] as well as autonomous functioning – engaging in activities without requiring assistance from others.[25,53]

Considering the diversity of areas in which self-management has been used successfully with children with ASD, in combination with the findings of meta-analytic studies that indicate that self-management is a powerful intervention for children with ASD and that its effectiveness has been very well established,[34,35] we can certainly adopt the position of the report issued by the National Autism Center[13] that self-management adheres to the standards of evidence-based practice and is most beneficial for people with ASD. Since we have made a case for the effectiveness and efficiency of self-management and why we would consider self-management skills to be important for people with ASD, we may move on to the second question that addresses the issue of why does it work.

Explicit accounts for the effectiveness of self-management and remaining questions

The aforementioned conceptual question may be answered to a great extent by the first part, that is the preceeding theoretical discussion. Yet, we would like to make this answer more salient by underlying some important points from basic and applied studies conducted in the area of self-management. What appears to be widely accepted as an explanation for the powerful effects of self-monitoring, in a wide array of applications, is that we may consider it to function as a mediated stimulus.[58,59] Several aspects of self-monitoring have been conceptualized as mediating change, yet, Baer makes a very interesting point. Namely, that the stimulus that is present in all situations and that can cue the demonstration of the appropriate behavior is the person who self-monitors.[25] Thus, if the "self" is the mediating stimulus, teaching children with ASD how to self-manage may greatly enhance their functioning across all areas of development, across settings, across people and so on. The meditational attribute of self-management is strengthened further since various other stimuli associated with specific interventions may acquire mediating properties (e.g., self-management materials such as the self-monitoring device). These stimuli may be used as common stimuli between training and generalization conditions, but through training in self-management they are no longer introduced by a teacher or a therapist, the person who self-manages takes the initiative to use them.[59] A fine example of this demonstration comes from Koegel and her colleagues[40] who taught four children with autism how to respond to verbal initiations using a self-monitoring procedure. Verbal initiations generalized to multiple community settings where the participants continued to use self-management materials despite the absence of the treatment provider. In addition, concomitant reductions in disruptive behavior were observed without the need for special intervention.

There are some other issues, however, pertaining to the effectiveness of self-management for which we do not yet have definitive answers. For example, we don't know which components of a self-management package are most efficient or even necessary in producing behavior change. Would self-monitoring, for example, as an important component of self-management would suffice, in certain cases or under certain circumstances, to alter the target behavior in the desired direction? The issue of reactivity of self-monitoring, as well, continues to require further empirical investigation. As we mentioned earlier, because of the reactive effects often produced by self-monitoring, it has become an important therapeutic intervention in its own right affecting the frequency and maintenance of already acquired skills.[42,60] According to Nelson and Hayes[30], a self-monitoring procedure functions as a discriminative stimulus cueing the availability of the ultimate environmental consequences that are contingent on the target response. In many cases self-monitoring devises and materials gradually acquire reinforcing value due to their extended pairing with the ultimate reinforcement[60]. Is there enough evidence that self-monitoring doesn't have inherent reinforcing properties? Does it require systematic pairing with environmental contingencies to acquire its reinforcing properties? Those conceptual questions that al-

lude to the mechanisms involved in self-management acquiring reinforcing properties continue to present a challenge for researchers to explore. Yet, the effectiveness of self-management skills in fostering therapeutic and educational advancement, especially for people with ASD, is indisputable.

Concluding Comments

In conclusion, we would like to propose that it would be worthwhile to go back to investigating basic research questions pertaining to self-management in addition to using intervention packages that are effective in the treatment of people with ASD, which is the more common research practice since the 1990's. Having a better understanding of the mechanisms that control the beneficial properties of self-management may lead to consistently effective therapeutic and educational programming. As Baer suggested, packages are seen as highly desirable in the world of practice. However, without understanding, experimental proof, of the mechanisms, packages are not likely to result in generalized, progressive, and consistent behavior change.[21] We suggest that a balance between advancing the science of behavior analysis and offering solutions to challenging and chronic difficulties, such as those often associated with the diagnosis of ASD, is very important. Favoring either the basic or the applied aspect of behavior analysis will not ultimately benefit either the science or the recipients of the applications of scientific principles.

Self-management from a behavior analytic standpoint: Theoretical advancements and applications in Autism Spectrum Disorder

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Summary

The Experimental Analysis of Behavior provides a broad context that entails both strong theoretical roots as well as a wide spectrum of therapeutic and educational interventions that may be applied to improve the quality of life across all the domains that may be influenced by human action-behavior. Considered the most effective approach to intervention, Applied Behavior Analysis has gained widespread recognition in the treatment of Autism Spectrum Disorder (ASD) among other severe and milder disabilities. The purpose of this paper is to underline the importance of a continuous advancement of the field of behavior analysis in both domains: the conceptual and the applied. Combining basic and applied research in the area of self-management for individuals with autism is offered as an example that demonstrates the benefits of this venue. We suggest that following this tradition may only benefit the field of behavior analysis as a whole as well as the recipients of the positive outcomes that arise from its applications. It is often the case that research advancements in laboratory settings precede and set the stage for similar advancements in applied settings, yet, it is not always the case that basic findings are incorporated and explored in the context of applied research. We considered behavior analytic research studies on self-management to be a very good example of the aforementioned tradition since it has not only been explored in the field of applied behavior analysis, but also through studies posing basic research questions which helps us appreciate how the behavior analytic theoretical framework is constructed through the exploration of causative relations between independent and dependent measures. These relations need to be empirically validated and at the same time consistent with the conceptual framework of the experimental analysis of behavior. Such theoretical ties strengthen the science of behavior analysis and at the same time offer credibility to applied research and practice as they help us conceptualize how and why behavior change is achieved. On the other hand, treatment "packages" – very popular in current research and clinical practices – are often not tied to a conceptual framework which makes their effectiveness questionable. The effectiveness of such packages is usually limited and achieved under unclear circumstances. For behavior analysis to continue to advance as a science that systematically studies the behavior of organisms, we suggest that it is important to continue to evolve within the framework that ties basic and applied work as well as both of them with the conceptual foundation of behaviorism.

Key words: Behavior Analysis, Self-Management, Autism Spectrum Disorder

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