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IS IT POSSIBLE TO PREDICT THE EXPLOSION OF THE BEHAVIOURAL CRISIS?

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ABSTRACT

The person, as is easy to guess, learns to use problem behaviour to exert control over the environment, hence the need to use functional analysis to understand which antecedent conditions favour it and which consequent conditions maintain it. For various reasons, however, functional analysis does not always succeed in meeting these needs.

Starting from these assumptions, the author's interest was focused on possible precursors that in some way anticipate a possible behavioural 'explosion', and after observing more than 3,000 subjects, nine activators were identified with which it was possible to predict the 'outbreak' of a crisis.

KEYWORDS: Applied Behaviour Analysis (ABA), Maladaptive Behaviour, Functional Analysis, Activators of Behavioural Crisis.

INTRODUCTION

Psychological development is characterized by a progressive change in the interaction between the individual and the events of the environment, which together determine a continuous interchange of factors. The description of these interactions is the object of study of Applied Behaviour Analysis (ABA), which explains their topography, predicts their characteristics and probability of occurrence, and modifies their function. ABA, therefore, is not, as is commonly thought, a strategy for Autism, but the application of the principles of behavioural psychology to understand and improve the interactions between behaviour itself and environmental conditions; among these interactions, problem behaviours that belong to a class of behaviours that are not considered pertinent to the context in which the individual finds himself play a 'functionally adaptive' role. Typically, this class interferes with learning and the socialization process, creating uncomfortable situations. However, this hindering and interfering role with development is not always well understood, especially when placed within a properly psychopathological view (Guazzo, 2021; Nisi, Ceccarani, Dal Pozzolo & Dal Pozzolo1986).

A more general model predicts that the stabilization of maladaptive responses may occur more rapidly than development through a series of stages. In accordance with this model, certain types of apparently problematic behaviour may originally develop in a certain context and with certain contingencies and later be maintained because of associated *side effects*. According to this model, severe problem

behaviour develops through the gradual shaping of responses, mainly through social contingencies (Guazzo, 2021b).

At this point, it would be more correct to no longer speak of 'behaviour-problem', focusing on the subject, but of 'context-problem', focusing on the subject-environment interaction that, in the first place, determines the behaviour problem (Guazzo, 2023). This change of perspective not only helps us to broaden our view of the reality in which the subject is immersed (e.g. noises, temperature, spaces, people, etc.) but also helps us to overcome the mental barriers of which we are often victims (e.g. when we use labels such as hyperactive, aggressive, provocative, etc.) and to consider aspects that we had not taken into account (e.g. routine, anticipatory anxiety, changes, etc.). After all, every individual interacts continuously and reciprocally with events and objects in the environment, whereby most of a person's behaviour is a combination of actual (a component of the response has a direct effect on some aspect of the environment), linguistic (the communicative or symbolic process is learned and maintained by the operant paradigm), cognitive (an activity of knowledge of antecedent stimuli) and affective (an emotional activity associated with any antecedent stimulus) interactions (Skinner, 1953; Moderato & Copelli, 2009; Ianes & Cramerotti, 2013).

The individual's behaviour, therefore, should not be studied in isolation, but in interaction with the surrounding environment, this is possible through the procedure of functional analysis.

1. Functional analysis

Functional analysis is the study of the relationship between antecedent events, behaviour and consequences to predict and control classes of behaviour (cf. Guazzo, 2021a).

The '*antecedents*' of a behaviour are all those situations-stimuli that in some way control by facilitating the release of a behaviour (Pino, 2004). They can be subdivided into two levels: 1) a motivational *level*: an antecedent situation can create the motivation to emit a certain behaviour and this occurs when it determines the deprivation of something (reinforcement, attention, activity, food, etc.), inducing aversion states (frustration, sense of incapacity, disesteem, demotivation, etc.) and provoking relational discomfort (social anxiety, overwhelm, inability to establish adequate interpersonal contacts, etc.) for the subject.) for the subject; and 2) *a signaling level*: an antecedent situation signals to the subject *how to behave* at that moment and in that context in order to solve his or her problems; for example, a teacher's attention towards a classmate becomes a *discriminative stimulus* to activate a whole series of behavioural responses aimed at hitting another classmate, in order to obtain social attention (Tab. 3).

'Behaviour' indicates all the responses that are emitted by the subject. It must not only be described objectively and verifiably but also refer to visible data (e.g. the expression 'Luca is aggressive' is too general and does not clearly and easily describe the child's behaviour; whereas the expression 'Luca hits Marco's head with his hand' is clear, objective and easily verifiable). This means excluding from

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the definition of behaviour everything that cannot be directly detected by an external observer (thoughts, fantasies, etc.).

'Consequences' are the situations that occur after the emission of a response, regardless of whether it is intended or programmed. In fact, the effectiveness of a stimulus in producing certain consequences is not necessarily linked to the voluntariness, awareness of its use and desirability of the behaviour emitted. In other words, some consequences may reinforce inappropriate behaviour, unintentionally or without being aware of it; for example, social attention (positive reinforcement) is given to children especially when they behave inappropriately, often ignoring appropriate behaviour (Folgheraiter, 1984; Chok, Harper, Weiss, Bird, & Luiselli, 2020; Cipani, 1990).

The person, therefore, through the antecedent-behaviour-consequences relationship, learns strategies to regulate and/or control events in the environment, resorting, for example, to behaviours of escape or avoidance, of accessibility to the tangible, of social attention, etc., all of which may also be relevant to the same behaviour. Hence the need not only to understand why certain manifestations occur, what the antecedent conditions are (that favour their activation), and what the consequent conditions are (that keep it alive) but also to analyze the various phases that follow one another before arriving at the 'explosion' of the behavioural crisis (Guazzo. 2021a): 0) *control* (he performs an activity to his liking and no damage or behavioural changes are detected), 1) *pre-activation* (no damage is detected, but behavioural changes), 2) *activation* (slight damage and conspicuous behavioral changes are detected), 3) *intensification* (medium damage is detected), 4) *explosion* (serious or very serious damage is detected towards himself or others).

2. Behavioural crisis management

A behavioural crisis is an unplanned and involuntary response (physical, motor, emotional, etc.) evoked to cause harm to oneself, others or objects in response to certain environmental contingencies (Guazzo, 2016; 2021a; 2021b). As it is often destructive towards oneself and others and difficult to control, it often represents the real and only 'problem behaviour' that worries teachers, parents and therapists. Crises are always an indication of a high degree of suffering on the part of the subject who manifests them, and this is true regardless of how the crisis manifests itself. Moreover, any containment intervention (what to do when they occur) that one tries to implement is doomed to fail both because social attention is given (maladaptive behaviour is positively reinforced) and because the subject at that moment is not able to process contextual information and interact positively and effectively with interlocutors. Instead, a prevention intervention could avoid them or, at least, reduce their frequency and depower them, allowing for control and management of the crisis itself (Colvin & Sugai, 1989; Colvin & Scott, 2014; Colvin, Sugai & Patching, 1993; Janney & Snell, 2000; Guazzo, 2011, 2016, 2021a).

Prevention can be implemented through the identification of *activators* (i.e.: clues or signals) that can trigger the necessary conditions for the behavioural crisis to erupt. By observing, with the help of

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functional analysis, several such 'outbursts', we were able to identify nine activators that occurred most frequently: 1) He continuously moves in the chair, 2) He takes an unusual amount of time to perform an activity of his liking, 3) He repeats the same request several times, 4) He makes sounds (shouting, moaning, muttering, etc.) that are not functional for the activity, 5) Constantly shifts attention away from the task, 6) Says words and/or phrases that are not contextualized, 7) Emits stereotypes with increased frequency and/or intensity, 8) Turns away from the task or activity requested, 9) Makes continuous requests for a reinforcer (Guazzo, 2023).

These 9 activators were identified in a sample of 3141 subjects grouped by age: 956 aged 3-7 years, 1159 aged 7-16 years and 1026 older than 16 years (Tab. 1 and Fig. 2)

Tab. 1 – Activators grouped by age range in a sample of 3141 subjects observed.

N	ACTIVATORS	AGE RANGE						TOT.	
		3-7		7-16		>16			
		N	%	N	%	N	%	N	%
1	Constantly moving in the chair	107	11	124	11	112	11	343	11
2	Takes an unusual amount of time to perform an activity to his liking	105	11	119	10	109	11	333	11
3	Repeats the same request several times	104	11	132	11	121	12	357	11
4	Makes sounds (shouting, moaning, muttering, etc.) that are not functional to the activity	106	11	131	11	119	12	356	11
5	Constantly shifts attention away from the task	110	12	137	12	116	11	363	12
6	Says words and/or phrases that are not contextualised	109	11	139	12	120	12	368	12
7	Emits stereotypes with increased frequency and/or intensity	102	11	121	10	111	11	334	11
8	Turns away from the task or activity required	107	11	137	12	117	11	361	11
9	Makes continuous requests for a reinforcer	106	11	119	10	101	10	326	10
	TOT.	**956**	**100**	**1159**	***100****	**1026**	***100****	**3141**	**100**

*The sum of the percentages corresponds to 102 and not 100, as reported, because all individual percentages have been rounded up. ** The sum of the percentages corresponds to 99 and not 100, as reported, because all individual percentages have been rounded down.

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The data in Tab. 1 show certain stability in percentage terms between the activators in the various age ranges, with the exception of the >16 age range in which activators 1 (Continually move in the chair), 2 (Takes an unusual amount of time to perform an activity of his liking) and 9 (Makes continual requests for a reinforcer) have a lower incidence than the others (only 9% compared to the average which is 12%). This last figure is most probably due to the learning history of these subjects whose behaviour is more difficult to control by their interlocutors so that activators 1, 2 and 9 are less used (because they have been less successful) than activators 5 (Constantly shifts attention away from the task), 6 (Says words and/or phrases without context) and 8 (Turns away from the task or activity requested), which are the most used activators (13%) even compared to the other age ranges.

At this point, the reader might ask how to effectively use this 'activator analysis' to prevent the subject's behaviour from 'exploding' into a crisis. To answer the reader's question and to be very clear, let's analyze the case of Luca, a ten-year-old boy in a fourth-grade Primary School class. Luca often hits some of his classmates with his hand for no apparent reason (See Tab. 2). To analyze the situation and identify the antecedents and consequences of the child's behaviour, the classic descriptive functional analysis procedure was used using the A-B-C model of Tab. 3 (Guazzo, 2021a, 2021b, 2023).

Tab. 2 – Schematic representation of Luca's classroom behaviour, where Sd is the Discriminative Stimulus and R is the child's Response (behaviour) to Sd.

Sd → **1** The teacher talks to a student.	**R** → **2** Luca walks towards Marco.	**Sd** → **3** The teacher invites Luca to sit down.	**R** → **4** Luca starts to mumble something.
Sd → **5** The teacher tells Luca to stop mumbling and work.	**R** → **6** Luca leans on Marco's desk who is intent on colouring a drawing.	**Sd** → **7** The teacher invites Luca to return to his seat.	**R** → **8** Luca looks at the teacher and takes the eraser from Marco.
Sd → **9** The teacher orders Luca to return the eraser and sit down.	**R** → **10** Luca hits Marco on the head.	**Sd** → **11** The teacher rushes towards Marco.	**R** → **12** Luca smiles and sits down in his seat.

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Sd → **13** The teacher scolds Luca.	

From the representation of Tab. 2, the functional analysis of Table 3 shows that the function of Luca's behaviour is to be attributed to a 'request for attention', and therefore, according to Applied Behaviour Analysis, it is possible to refer to interventions on antecedents (proactive strategies; e.g. giving the child a lot of attention when he is behaving well), on increasing abilities (e.g. teaching new functionally equivalent abilities: raising the arm to get attention) and on consequences (reactive strategies; e.g. taking away a very welcome activity from the subject for a certain period of time). These interventions, however, even if applied methodologically in an unexceptionable manner, do not always reduce or extinguish maladaptive behaviour; this happens either because the identified function is not the right one or because the behaviour depends on several functions at the same time or because these procedures do not teach the person alternative and functionally equivalent behaviours to the problematic one. Moreover, once the latter intensifies and 'explodes', it is much less responsive to intervention. For all these reasons, it is important and crucial to identify the activators of an 'explosive' behaviour.

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Tab. 3 – Classical Functional Analysis (ABC) sheet derived from Table 2 and in which the possible function of Luca's behaviour is also transcribed.

ABC DATA SHEET				
Name: Luca (10 years old)		**Observer:** G.M.G.		
Observed behaviour: Hitting a classmate's head with the hand.				
Activities: Maths lesson.	**Context:** Classroom (4th Primary School)		**Date:** 03/21/2023	
People present: Luca, Marco, teacher, classmates.				
Time	**Antecedents**	**Behaviour**	**Consequences**	**Probable function**
Ora 9,05 Ora 9,20	1. The teacher talks to one of Luca's classmates. 3. The teacher sends Luca back to his seat. 5. The teacher orders Luca to return the gum and sit down. 7. The teacher rushes towards Marco and scolds Luca.	2. Luca walks towards Marco, mumbles something and leans back on his desk. 4. Luca looks at the teacher and takes the eraser from Marco. 6. Luca hits Marco in the head. 8. Luca, sorridendo, si siede al suo posto.	3. The teacher sends Luca back to his seat. 5. The teacher orders Luca to return the gum and sit down. 7. The teacher rushes towards Marco and scolds Luca.	**Request for attention**

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Luca's behaviour of 'hitting Marco on the head', as can be deduced from Tab. 1, has as its precursor activator 4 (Emits sounds: shouting, moaning, *muttering*, etc., not functional to the activity) therefore, whenever the child, in the classroom, starts to mutter the teacher approaches him and asks him why he is muttering, if he needs something or if he wants to call attention. In this way, the 'activator' is reinforced, avoiding behavioural escalation (until the crisis erupts) and placing the problem behaviour under the control of the operator.

In order to be able to verify the importance of activators in avoiding the explosion of the crisis, we took into consideration a sample of 218 subjects (180 males and 38 females), all with Autism Spectrum Diagnosis (ASD), of whom 26 were level 1, 123 level 2 and 69 level 3 (DSM-5), subdivided into three age ranges: 3-7 years, 7-16 years and over 16 (Tab. 4); and in three different contexts: School, Home and Institute (Rehabilitation Centre) (Tabb. 5 and 6).

The intervention consisted of positively reinforcing the 'activator', both by giving more attention to the subject and by allowing him to immediately access the adaptive behaviour functionally equivalent to the maladaptive one: for example, if the behaviour were emitted to 'escape' from the task when he emitted the activator the operator would say to him: 'I've run out of papers, let's go to the secretary's office to get them', then teaching the subject to express his 'displeasure' appropriately or to make him make a choice between the task from which he wanted to escape and another more agreeable one until he accepted even the less agreeable one without emitting the dysfunctional behaviour anymore; obviously the interaction with the subject changed according to his functioning profile.

After several treatment sessions, the maladaptive behaviour of the subjects taken into consideration completely disappeared without causing any more behavioural crisis (Fig. 3).

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Tab. 4 – Participants distributed by age, gender and DSM-5 level. Legend: NS = Number of Subjects; M = Male; F = Female; TOT. = Totals.

AGE	NS	M	F	DSM-5 Levels		
				L1	L2	L3
3-7	61	47	14	9	36	16
7-16	78	67	11	10	42	26
> 16	79	66	13	7	45	27
TOT.	**218**	**180**	**38**	**26**	**123**	**69**

Tab. 5 – Place of intervention: School, Home and Institute (Rehabilitation Centre). Legend: NS = Number of Subjects; TOT. = Totals.

AGE	NS	PLACE OF INTERVENTION		
		SCHOOL	HOME	INSTITUTE
3-7	61	37	19	5
7-16	78	34	23	21
> 16	79	43	13	23
Tot.	**218**	**114**	**55**	**49**

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Tab. 6 - Most recurrent activators, by age group, in three different contexts: School, Home and Institute (Rehabilitation Centre).

AGE	NS	ACTIVATORS																											
		1			2			3			4			5			6			7			8			9		
		S	C	I	S	C	I	S	C	I	S	C	I	S	C	I	S	C	I	S	C	I	S	C	I	S	C	I
3-7	61	9			1			7		1	9	1	1	2			3			6			9			3			9	
7-16	78	13		1		1	1	5	2	4	7	2	3				2			6	9		9			3			10	
> 16	79	11			7			2		7		1		5			3		1	2	1	10	13			5			11	
TOT.	218	33		1	8	1	1	14	2	12	16	4	4	7			3	5	1	2	13	19	31			11			30	
%		15						6		6	12										6	12	14						14	

The graph in Fig. 3, which refers to the data in Tab. 6, visualizes the single-subject experimental design (AB) used for the reduction of all maladaptive behaviours that exceeded the occurrence of 6, in the corresponding age groups; from which it can be seen that maladaptive behaviours went from an average of about 20 in the baseline (first A) to their total absence in the fourth follow-up session (F.U.), acting only on the activator.

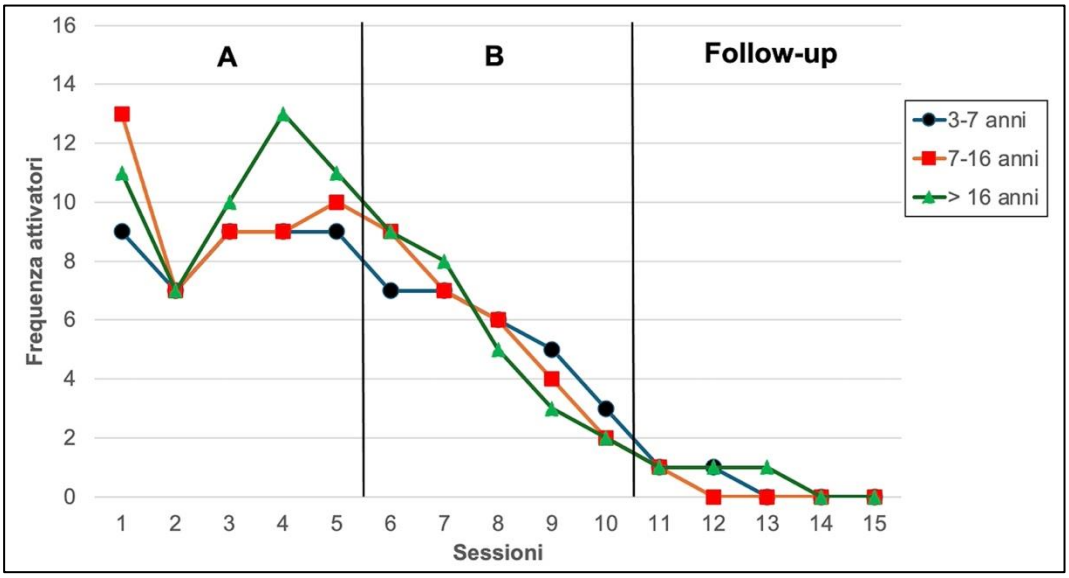

Fig. 3 – Single-subject experimental design AB, in which A, or *baseline measurement*, indicates the measurement of the behaviour being analyzed before the intervention begins. In contrast, B, or *treatment*, indicates the effect produced by the intervention on the behaviour to be changed (this is obviously the same behaviour that was examined during the baseline measurement; follow-up (F.U.)

indicates monitoring and control observations after the end of the treatment (Sidman, 1960; Bailey & Burch, 2002; Guazzo, 2021b; Cottini, 2016).

3. CONCLUSIONS

The treatment of problem behaviours is oriented towards managing the crisis to protect the safety of the subject and others, or to that, which is considered the actual intervention, of teaching positive behaviours, i.e. all those *substitute* behaviours (functionally equivalent), which allow the subject to achieve the same objectives pursued with the implementation of the behavioural crisis. All this, however, entails, as we have seen, a series of methodological difficulties (functional analysis is not always effective, behaviours can take on different functions, observers are not adequately trained, etc.), operational difficulties (difficulties of implementation in real contexts: home, school, etc.) and decision-making difficulties (choice of the most effective strategies for educational intervention: proactive, reactive, etc.), and of the procedures most functional to the subject's characteristics, among all those available in behavioural psychology) that can thwart the intervention (Iwata, 1988, 1994; Iwata & Dozier, 2008; Mace, 1994; Hanley, 2012). Indeed, once the problem behaviour intensifies and 'explodes', it is much less responsive to treatment.

Activator analysis, on the other hand, allows for a much simpler intervention, identifying precursors that anticipate the problem, keeping them under control, and thus avoiding behavioural escalation. This analysis certainly needs more observational data, but it allows effective intervention to anticipate and avert the possibility of a crisis and can be used for any inappropriate behaviour.

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