Analysis of the role of motivating operations in the therapeutic verbal interaction

Víctor Estal-Muñoz, Natalia Andrés-López, Gladis L. Pereira, Elena Gálvez-Delgado, and María Xesús Froxán-Parga

Universidad Autónoma de Madrid, Madrid (Spain)

Título: Análisis del rol de las operaciones motivadoras en la interacción verbal terapéutica.
Resumen: El concepto de *operación motivadora* (OM) ayuda a suplir los problemas de la noción tradicional de motivación en el estudio del proceso terapéutico. En este trabajo, se analizó el rol de tres tipos de verbalizaciones del terapeuta con una función de OM y se comprobó su relación con el comportamiento verbal de los clientes. Para tal propósito, se observaron grabaciones de 40 sesiones de terapia pertenecientes a 9 casos diferentes. El Sistema ACOVEO fue el sistema de categorías empleado para identificar las categorías *OM con información clínica*, *OM con consecuencias* y *OM con emparejamiento*. El SISC-CVC fue aquel utilizado para identificar las verbalizaciones de las clientes codificadas como *Acuerdo* y *Desacuerdo*. Se llevaron a cabo análisis secuenciales para comprobar la relación entre las diferentes OMs entre ellas y con el acuerdo del cliente. Los resultados mostraron que las diferentes OMs fueron emitidas en bloque y que cuando la categoría *OM con información clínica* se emitía con *OM con consecuencias* o con *OM con emparejamiento* se encontraba una mayor asociación con la categoría de *Acuerdo* ($r = 2.47$; $r = 1.86$) que con la de *Desacuerdo* ($r = -.53$; $r = -.36$). Estos resultados destacan la importancia de la emisión de OMs que asocian de manera directa el comportamiento del cliente con eventos con un componente elicitador, ofreciendo estrategias más eficaces para los terapeutas.
Palabras clave: Motivación. Operación motivadora. Interacción verbal terapéutica. Investigación de procesos. Cambio terapéutico.

Abstract: The concept of *motivating operation* (MO) helps to overcome both theoretical and practical problems of the traditional notion of motivation in the study of the therapeutic process. In this research, the role of three types of therapists' verbalizations with an MO function was analyzed, in addition to their association with clients' verbal behavior. For this purpose, recordings of 40 clinical sessions belonging to 9 different cases were observed. The ACOVEO System was the observational category system used to identify the therapists' verbal MOs coded as *MO with clinical information, MO with consequences,* and *MO with pairings*. The SISC-CVC was the one used to identify clients' verbalizations coded as *Agreement* and *Disagreement*. Sequential analyses were performed to test the relation between the three different types of MOs with themselves, as well as with clients' concurrence. Results showed that the different MOs were emitted in chunks and when *MO with clinical information* was uttered either with *MO with consequences* or *MO with pairings* there was a greater association with *Agreement* ($r = 2.47$; $r = 1.86$) rather than with *Disagreement* ($r = -.53$; $r = -.36$). These findings highlight the importance of the emission of MOs that associate directly events with an eliciting component with clients' behavior, giving more efficacious strategies to the therapists.
Keywords: Motivation. Motivating operation. Therapeutic verbal interaction. Process research. Clinical change.

Introduction

Motivation is a fundamental aspect of psychotherapy since asking for help does not guarantee that a client will initiate the necessary steps for change to occur. For this reason, various lines of research have studied the way in which therapists can increase the motivation of their consultants. The *Transtheoretical model of change* (Prochaska & DiClemente, 1983) and the *Motivational interview* (Miller & Rollnick, 1991) are considered two of the greatest models of therapeutic change. However, several authors have been critical of some of their proposals (e.g., Littell & Girvin, 2002), particularly, with the conception of motivation that they underpin (Froján-Parga et al., 2010).

From these approaches, motivation is considered something that is located within the person. In that sense, the therapist's goal is to assess the client's degree of motivation, so that they will be able to increase it. Additionally, a distinction is made between extrinsic and intrinsic motivation. Whilst the former stands for the motivation to do something in order to meet some external demands, the latter does it for the motivation to do something for its interest (Deci & Ryan, 1975). It is assumed that intrinsic motivation is the most beneficial for change in comparison to external motivation, that even is considered that leads to engaging in problematic behaviors (Clanton-Harpine, 2015). From a behavioral perspective, this way of understanding motivation entails several conceptual problems that might affect the control that therapists have over clients' behavior during the therapeutic process.

The first critic refers to the ontology of motivation. Motivation is not something that can be seen or touched, either is something that one can have, it is a verbal construct that we use for reporting changes in a specific behavior (Skinner, 1957). The act of treating hypothetical constructs as if they were real and concrete events is called *reification*, and we make it when talking about motivation. Thus, the "assessment" or the "exercising" of motivation would be a verbal expression and not something that therapists actually do. The second critic refers to the distinction between the inner and the external world. Skinner (1953), among other authors (Palmer, 2009; Baum, 2011), pointed out that there is no empirical evidence to make that qualitative distinction since the same processes could be applied to private and overt events. The differentiation between intrinsic and extrinsic motivation is an example of this categorization error. For that matter, addressing mechanisms of change would be a more fruitful way of approaching the study of motivation.

An alternative proposal to the traditional conception of motivation was formulated by Michael (1982). This author revived the term *establishing operation* originally proposed by Keller and Schoenfeld (1950) and defined it as an environ-

* Correspondence address [Dirección para correspondencia]:
María Xesús Froxán-Parga. Universidad Autónoma de Madrid. Departamento de Psicología Biológica y de la Salud. Facultad de Psicología. C/ Ivan Pavlov, 6, 28049. Madrid (Spain). E-mail: mxesus.froxan@uam.es

mental event that affects an organism's behavior by increasing its frequency of occurrence and the value of the reinforcers associated with it. Deprivation is a paradigmatic example of establishing operation. Nowadays, the concept of _motivating operation_ (MO) is preferred, since it helps to identify distinct motivating operations that previously have been underemphasized and to clarify their effects (Laraway et al., 2003). This reconceptualization conceives motivation as an observable and manipulable process and not as an internal hypothetical construct that must be inferred.

There are many studies that show the crucial role that motivating operations play in behavior change, and this importance has been demonstrated for different behaviors, populations, and settings. Incorporating MOs into the analysis of problematic behavior has changed interventions by focusing more on modifying the antecedent variables and, thus, preventing the appearance of problem behaviors. This can be clearly observed in how interventions for people with disabilities have been developing during the last years (i.e., Langthorne et al., 2007). For example, self-injury in children with autism can be decreased by reducing the deprivation of stimulation, like providing noncontingent access to preferred toys (DeLeon, et al. 2000). This growing interest led different authors to study the effect of MOs on consumer behavior, as Fagerstrøm and Ghinea (2011) did for online purchases. They examined the impact of previous customers' online ratings and reviews on online shopping, showing how others' opinions influence us in buying or not a product. These results are decisive for the intervention with adults, and therefore for the present study, since the type of stimuli analyzed and conceptualized as MO was verbal (Fagerstrøm & Arntzen, 2013).

In clinical intervention with adults, therapists usually change the likelihood of clients' behavior through their verbalizations. Such verbalizations acquire the motivating function as a result of a learning process, and that is why they are called _conditioned motivating operations_ (Michael, 2007). In this respect, previous studies in the analysis of therapeutic verbal interaction showed that therapists alter the function of their clients' behaviors through the anticipation of the appetitive and aversive consequences associated with it (de Pascual, 2015). These sorts of verbalizations (i.e., "if you keep avoiding spiders you will never stop fearing them") might constitute rules, that is, verbal descriptions of a contingency (Vaughan, 1989). Ultimately, this is important for two reasons: (1) It means that we can give a certain function to these kinds of verbalizations, that is, rules as MOs (Schlinger, 1990), and (2) it shows that clients' behaviors can be modified not only by direct contingencies (discrimination and reinforcement) but also by the presentation of described contingencies (Vargas-de la Cruz et al., 2017).

Despite that, an important question is left: how these verbalizations can have an impact on clients' behavior? In other words, what are the mechanisms that explain why a behavior is altered through language? Up to date, the explanations based on operant conditioning have led the field in the study of language from a behavioral approach. Relational Frame Theory (RFT) constitutes an example of this (Hayes et al., 2001). RFT is based on the studies of equivalence relations (Sidman, 2000) and it aims to explain how the function of stimuli is transformed through language. In very abridged form, the principal idea is that subjects would learn to relate stimuli in different ways through multiple exemplar training and, based on these different established relations (which are called _frames_), the function can be transformed. For example, if a person is reinforced for responding that "A is more than B" and later B acquires an aversive function, he or she would react more aversively to A than to B based on the previous relation or frame. However, this proposal is not exempt from critics. Tonneau (2001), in his review of equivalence relations, claims that the role of pavlovian conditioning has not received enough attention in the explanation of function altering.

During the last few years, some authors have studied the role of respondent procedures in the emergence of language functions (Delgado & Rodríguez, 2020; Tonneau et al., 2006;). That has opened the door to reconsidering the role of classical conditioning in the explanation of language. The analysis of the explanatory potential of classical conditioning about language began to be studied before the mid-20th century, in the context of mediated generalization studies (Eilifsen & Arntzen, 2021). For some authors, classical conditioning would be the process behind the referential capacity of words, that is their capacity to elicit the same reactions as their referents. Different studies revealed how the pairing of words with other words could change the way people responded to them without a process of reinforcement. In this line, Staats & Staats (1957) conducted experiments in which a nonsense syllable (i.e., "YOF") was paired with positive words (i.e., "Beauty" and "Healthy") and they demonstrated that the syllable was able to elicit positive responses by its own afterward.

In the light of the foregoing, the present study aimed to analyze the verbal sequences that might function as MOs in the therapeutic process. The main goal was to analyze how therapists use them and explore the role that they might play in the clinical change. To do that, the latest advances in therapeutic verbal interaction were considered. The ACOVEO System (de Pascual-Verdú et al., 2019), a coding system that describes the function that a verbalization or set of verbalizations can have according to their possible role within the functional chain, notes this progress.

In previous versions of this coding system (e.g., SISC-INTER-CVT), certain categories were based on morphological descriptions, while others were based on functional descriptions (Ruiz-Sancho et al., 2015). In this updated version all the categories are functional. That is the case with the clinical information that therapists provide to clients. The SISC-INTER-CVT made a distinction between the informative and the motivational categories, however, the ACOVEO System considers the clinical information as a MO, since both are considered rules. This is very important for the

study of MOs because they can be extended to other verbalizations apart from the anticipation of behavior consequences. This, and the consideration of the contribution of pavlovian conditioning to language were the prompts to start the study of pairings in verbal interaction. In the ACOVEO System, verbal pairings are considered the third type of MOs, since they are also rules that pursue changes in behavior by altering the appetitive and aversive function of certain stimuli. Besides, they constitute the connection between the current study of language and the traditional pavlovian research. In this work, the anticipation of consequences and the pairings earn significant attention since they are defined by the establishment of a relationship between the client's behavior and appetitive or aversive events– whereas the clinical information verbalizations establish other kinds of contingencies – and the elicit function has been proposed as the key aspect of motivation (Dougher & Hackbert, 2000)

In line with the aforementioned, the following hypotheses are proposed according to the use and the role of the different motivating operations:

Hypothesis 1: Focusing on their shared function, it is expected that the verbalizations with motivating operation function will be emitted together by the therapists in their speech. That is, verbal motivating operations will be preceded and followed more by other verbal motivating operations than other types of verbalizations of the therapists.

Hypothesis 2: Regarding the type of contingencies that verbal motivating operations specify, it is foreseeable to find different relations between them and the clients' verbalizations. Specifically, when the clinical information is combined with either the anticipation of consequences or the pairings it is expected to find a greater association with clients' agreement than when it is emitted alone.

Method

Sample

In this study, recordings of 40 clinical sessions, involving 9 adults with different problematics, were observed. Six cognitive-behavioral therapists with different years of clinical experience participated in the study. All of them rendered service at ITEMA, a private clinical center in Madrid (Spain). Psychological interventions were individual and lasted approximately one hour per session. Therapists delivered their usual therapy and the observations were collected eventually, so neither the therapists nor the clients knew the specific objectives, the hypotheses, or the design of the study. All participants obtained written informed consent and approval from the Ethics Committee of the Autonomous University of Madrid. The specific characteristics of the sample are described in Table 1.

Table 1
Characteristics of clients and therapists.

	Client			Therapist			
Case	Sex	Age	Psychological problem	Therapist	Sex	Experience (Years)	Number of sessions
1	W	35	Hypochondria and marital problems	A	W	7	4
2	W	32	Generalized anxiety	A	W	19	2
3	M	31	Obsessive and compulsive problem	B	W	18	5
4	W	32	Couple problems	B	W	16	5
5	W	36	Agoraphobia	B	W	15	5
6	M	21	Fear of spiders	C	W	1	5
7	M	36	Generalized anxiety and lack of social skills	D	M	4	5
8	W	21	Obsessive and compulsive problem	E	W	1	5
9	W	21	Onychophagy	F	W	1	4

Note. W= Woman M= Man

Design and Variables

The study design was prospective observational. The therapist and the client's verbal behavior were the variables considered in this study. The predictor variables of the study were the categories of the therapist coded as *Motivating operation with clinical information* (MO Information), *Motivating operation with consequences* (MO Consequences) and *Motivating operation with pairing* (MO Pairing). For the first hypothesis, the criterion variables were the categories of the therapist coded as *Discriminative stimulus*, *Instructional discriminative stimulus*, *Reinforcer*, *Punishment* and the previous three MOs. For the second hypothesis, the criterion variables were the categories of the client coded as *Agreement* and *Disagreement*. Two different observational category systems were employed for their codifi-

cation. The *ACOVEO System* (de Pascual-Verdú et al., 2019) was used for the identification of the therapist's verbalizations and the *SISC-CVC* (Ruiz-Sancho et al., 2015), for the client's verbalizations. A detailed description of both observational category systems is presented in Table 2. Additionally, a third variable was considered to group the different sessions. In order to have a representative sample of the therapeutic process, sessions were selected according to the *clinically relevant activities* undertaken by the therapists. These were *Evaluation*, *Explanation*, *Treatment I*, *Treatment II* and *Consolidation* (see Table 3 for their definition). Sessions were already assigned to one of these clinically relevant activities in a previous study that conducted discriminant analyses (see Froján-Parga et al., 2011).

Table 2
Descriptions of coding categories of ACOVEO System for therapists and SISC-CVC for clients.

Verbal behavior of therapist	Description
Antecedent stimuli	
Discriminative stimulus	Therapist's verbalization that evokes a response from the client whose main objective if provide information (e.g., "How was your week?").
Instructional discriminative stimulus	Therapist's verbalization related to performing tasks in or out of session (e.g., "You have to practice this exercise every day").
Consequent stimuli	
Reinforcer	Therapist's verbalization that shows approval, agreement, and/or acceptance of the behavior issued by the client (e.g., "Well done!").
Punishment	Therapist's verbalization that shows disapproval, rejection and/or unacceptance of the behavior that was just issued by the client (e.g., "I totally disagree with you").
Motivating operations	
Motivating operation with clinical information	Therapist's verbalizations that convey technical or clinical knowledge (e.g., "Sadness is the emotional response to a loss").
Motivating operation with consequences	Therapist's verbalization that clearly states the appetitive or the aversive consequences of the client's behavior (e.g., "If you do not stop using your phone before going to bed your insomnia will get worse").
Motivating operation with pairing	Therapist's verbalization that clearly defines a behavior or an event in appetitive or aversive terms (e.g., "Smoking is disgusting").
Verbal behavior of therapist	Description
Agreement	Client's verbalization that shows agreement, acceptance and/or admiration for the utterances issued by the therapist (e.g., "You are right").
Disagreement	Client's verbalization that shows disagreement, disapproval and/or rejection of the utterances issued by the therapist (e.g., "I am not sure, I do not see it the same way").

Table 3
Descriptions of the clinically relevant activities undertaken by the therapist.

Clinically relevant activity	Description
Evaluation	The therapist examines the client's problem and assesses the variables that contribute to its origin and maintenance.
Explanation	The therapist explains the functional analysis, the therapeutic objectives and the treatment proposal.
Treatment I	The therapist starts to train strategies in session and prescribes guidelines for the behavior outside of the clinical setting.
Treatment II	The therapist continues to train strategies in session and prescribes guidelines for the behavior outside of the clinical setting.
Consolidation	The therapist reviews and maintains the treatment activities for consolidating the achieved changes.

Instruments

The software used for the observation and coding of sessions was *The Observer XT* 12.5 (Noldus ©). This software was also used for periodic analyses of inter-judge agreements. Descriptive analyses were performed using *SPSS Statistics* version 21 software (IBM ®), while sequential analysis we performed using version 5.1. of *Generalized Sequential Querier* (GSEQ), a software for the analysis of sequential behavior patterns developed by Bakeman and Quera (1995).

Procedure

The recordings deployed in this study were selected from a bank of recorded clinical sessions that belong to ACOVEO Research group (Universidad Autónoma de Madrid). These recordings have been collected for almost 20 years using a closed camera circuit in the collaborating center. Cases were selected from the bank ensuring that there was a session belonging to each five clinically relevant activities. This could be possible for 6 of them, but 2 more sessions from another case had to be incorporated into the sample in order to have the same number of clinically relevant activities sessions.

The observation and the codification of sessions were performed by an expert in the use of the ACOVEO System and the SISC-CVC. A second observer helped the former in order to guarantee the precision of data collection. For every 10 coded sessions, one was randomly selected to be additionally coded by a second observer. Subsequently, inter-judge agreements were calculated using the Cohen's kappa agreement coefficient (Cohen, 1960). These kappa coefficients were between .70 and .78 using a tolerance window of 2 seconds, which means that the inter-judge agreements were *excellent*.

Statistical Analyses

Descriptive analyses were performed to see the frequency of use of motivating operations in relation to the other therapist's verbalizations.

To test the proposed hypotheses, sequential log-linear techniques were used (Bakeman & Gottman, 1997). Sequential analyses allow testing if there is a relationship between adjacent behavior units, by calculating the r lag transition probability of a *conditioned* behavior to happen before (-1 delay) or after (+1 delay) a *given* behavior. For this purpose, the

adjusted residuals (z) were calculated. In addition, in order to test the association degree between specific pairs of behavior in the different transition lags (that is, -1 and +1 delays), Yule's Q was calculated. It reports the strength of the association in a similar way to the correlation coefficient, taking values ranging from -1 to 1 (Bakeman & Quera, 1995).

Results

Descriptive Analyses

The percentage of appearance of the different categories of the therapist's verbal behavior is presented in Table 4. It is observed that the most frequently coded category is *Antecedent stimuli*, followed by *Motivating operations* and *Consequent stimuli*, respectively, in all the clinically relevant activities except in *Treatment II* where *Consequent stimuli* percentage is higher than *Motivating operations*. Regarding the motivating operations themselves, the one that represents the highest percentage is the category of *MO Information*, followed by the *MO Consequences* and, finally, the category of *MO Pairing*, in all the clinically relevant activities, except in *Evaluation* where *MO Pairing* percentage is greater than *MO Consequences*.

The analyses show that the relations between categories remain constant along the therapy, although they also show that the percentages of each category change. *Antecedent stimuli* are higher in *Evaluation* than in *Explanation*, *Treatment* and *Consolitation* in general, while *Consequent stimuli* are higher in *Treatment* and *Consolidation* in general than *Evaluation* and *Explanation*. *Motivating operations* are higher in *Explanation*, *Consolidation* and *Treatment* than in *Evaluation*, but attending to each motivating operation, *MO Information* is greater in *Evaluation*, *Explanation* and Consolidation than *Treatment I* and *II,* while *MO Consequences* and *MO Pairing* are higher in *Treatment I* and *II*. This might reflect the particular role of each type of therapist's verbalizations that will be discussed below.

Table 4
Descriptive statistics for the variables of the therapist's verbal behavior for each clinically relevant activity.

Therapist's verbal behavior	Clinically relevant activities				
	Eval. ($n = 8$)	Expl. ($n = 8$)	Treat. I ($n = 8$)	Treat.II ($n = 8$)	Consol. ($n = 8$)
Antecedent stimuli	71.3	48.4	58.4	57.7	52
Consequent stimuli	13.3	18.3	19.5	21.5	20.2
Motivating operations	15.4	33.3	22.1	20.8	27.8
Motivating operation with clinical information	83.8	84.7	76.9	78.8	85.3
Motivating operation with consequences	7.8	12	15.4	13.5	11.2
Motivating operation with pairing	8.4	3.3	7.7	7.7	3.5
Total	100	100	100	100	100
Total	100	100	100	100	100

Note. Eval = Evaluation, Expl = Explanation, Treat = Treatment, Consol = Consolidation.

Sequential Analyses

To test hypothesis 1, the degree of association between the therapist's behaviors categorized as MOs and all the categories of the therapist's verbal behavior was calculated based on the -1 and +1 delays. The results obtained are collected in Table 5.

As can be observed, these results support hypothesis 1. There is a positive and significant relationship between the different categories of MOs among themselves more than with other categories. Regarding the category of *MO Information*, there is a strong positive association between it and the categories of *MO Consequences* and *MO Pairing* for -1 and +1 delays, but not with itself. Furthermore, this category also shows a positive association when the delay is -1 with the *Reinforcer* and *Punishment* categories. This positive association can also be observed between this category and the *Instructional discriminative stimulus* category, for both delays.

With regards to the *MO Consequences* category, it shows a positive association with all the motivating operations for both delays, but also no correlation with any other category. Something similar happens with the *MO Pairing* category, it shows a positive correlation with *MO Information* and *MO Consequences*, for +1 and -1 delays, but not with itself (the correlation is positive but not significant). This category also shows a positive association with the *Reinforcer* category when the delay is -1, but it does not show any other association with other categories.

Table 5
Relationship between motivation operations and therapist's verbal behavior for -1 and +1 delays.

	DS	IDS	REI	PUN	MO Information	MO Consequences	MO Pairing
MO Information	r = -13.28*	r = 3.10*	r = 5.54*	r =9.72*	r = -8.35*	r = 8.18*	r = 8.97*
(-1)	Q = -.64	Q = .20	Q = .27	Q = .65	Q = -.69	Q = .59	Q = .72
MO Information	r = -1.00	r = 6.19*	r = -6.60*	r = -1.92	r = -8.35*	r = 8.18*	r = 5.44*
(+1)	Q = -.04	Q = .35	Q = -.55	Q = -.35	Q = -.69	Q = .59	Q = .57
MO Consequences	r = -6.92*	r = 1.74	r = -0.13	r = -0.78	r = 8.18*	r = 7.29*	r = 4.70*
(-1)	Q = -.96	Q = .25	Q = -.02	Q = -.37	Q = .59	Q = .74	Q = .71
MO Consequences	r = -2.81*	r = 1.73	r = -3.69*	r = -1.48	r = 8.18*	r = 7.29*	r = 3.74*
(+1)	Q = -.30	Q = .25	Q =-1.00	Q = -1.00	Q = .59	Q = .74	Q = .66
MO Pairing	r = -4.45*	r = .18	r = 2.05*	r = -.05	r = 5.44*	r = 3.74*	r = .62
(-1)	Q =-.70	Q = .05	Q = .32	Q = -.03	Q = .57	Q = .66	Q = .30
MO Pairing	r = -2.33*	r = 1.25	r = -2.16*	r = -1.04	r = 8.97*	r = 4.70*	r = .62
(+1)	Q = -.37	Q = .26	Q = -.74	Q = -1.00	Q = .72	Q = .71	Q = .30

Note. MO Information= Motivation operation with clinical information; MO Consequences = Motivation operation with consequences; MO Pairing = Motivation operation with pairing; *DS* = Discriminative stimulus; IDS = Instructional discriminative stimulus; REI = Reinforcer; PUN = Punishment
Q = Q de Yule
r = Adjusted residuals
*p < .05

To test hypothesis 2, two new categories were formed. The GSEQ program only analyses sequences of two behaviors, but on this occasion analysis of three behaviors sequences was required. Fortunately, the GSEQ program allows to combine of two different categories, so when two motivating operations categories appeared next to each other the program could recognize both as one category. This was useful because the sequential analyses could be run using these new categories and a more complex verbal interaction between therapist and client could be studied. Taking this into account, the first formed category was the combination of the category *MO Information* and the category *MO Consequences*. The second formed category was the combination of the category *MO Information* and the category *MO Pairing*.

As can be seen in Table 6, the second hypothesis is partially supported by the data. The category *MO Information* was positively associated with both client's categories, *Agreement,* and *Disagreement,* in a +1 delay. However, when this category was combined with *MO Consequences* a positive association with *Agreement* was found, but not with *Disagreement*. In the case of the combination of *MO Information* with *MO Pairing* a similar result was found; there was a positive association between this category and client's agreement, despite it was not statistically significant (but close). No association with the client's disagreement was found.

With regards to the degree of association, although a higher relation was found between the *MO Information* and *Agreement* than in the case of the combined categories, no relation was found between the latter and *Disagreement*. This could not be said for the former since almost the same degree of association was found for *Agreement* and *Disagreement*. In other words, a more direct association was found between the combined categories and the client's agreement. The possible explanations of these results and the implications for therapeutic interventions are discussed in the next section.

Table 6
Relationship between motivation operations and client's verbal behavior for +1 delay.

	Agreement	Disagreement
MO Information	r = 26.35*	r = 10.38*
(+1)	Q = .71	Q = .78
MO Information + MO Consequences	r = 2.47*	r = -.53
(+1)	Q = .41	Q = -1.00
MO Information + MO Pairing	r = 1.86	r = -.36
(+1)	Q = .43	Q = -1.00

Note. MO Information = Motivation operation with clinical information; MO Consequences = Motivation operation with consequences; MO Pairing = Motivation operation with pairing
Q = Q de Yule
r = Adjusted residuals
*p < .05

Discussion

The aim of the present study was to test the role of different verbalizations with a MO function in therapeutic verbal interaction. The results confirmed the proposed predictions. The descriptive and the sequential analysis allowed to test how the different verbal MOs are used in therapy. MOs represent a great percentage of the verbalizations emitted by the therapists (from 15,4% to 33,3%), which probably underscores the importance of these verbalizations during the therapeutic process. However, this percentage is lower than the percentages found in previous studies (Froján-Parga et al., 2011). This could be explained by methodological issues. With the previous observational system, the SISC-INTER-CVT (Ruiz-Sancho et al., 2015), the *Informative Function* category, and the *Motivating Function* category (currently *MO Information* and *MO Consequences* in the ACOVEO System, respectively) were *state* categories. While *event* categories were coded by their frequency of occurrence, *state* categories were coded by their duration, which makes the comparison of data more difficult.

Regarding the percentage of occurrence of each motivating operation, the most frequently coded category was *MO Information* followed by *MO Consequences* and *MO Pairing*, in that order. These differences in the emission of the motivating operation may also be due to methodological issues. To ensure a high scientific standard, the ACOVEO System has restrictions when coding *MO Consequences* and *MO Pairing*. This means that to code one of these verbalizations, the used terms need to be clearly appetitive or aversive for the majority of the verbal community. For example, if the therapist says that "Tennis is easy", this could not be coded as an appetitive or aversive pairing, since the term "easy" could be neutral, appetitive, or aversive depending on the client and the context. However, the chances of error are reduced if this verbal community criterion is applied. Thus, if the therapist instead says "Tennis is very fun", this could be coded as a *MO Pairing* since "very fun" is an appetitive term for the majority of the verbal community. For this kind of matter, inter-judge analysis becomes essential.

According to the first hypothesis, data showed that the association between the motivating operations was higher among them than with the rest of the therapist's verbal behavior. This association could be specially observed when the motivating operations were different, for the three of them. However, different associations were found when the relation of the motivating operations with the same motivating operation was studied. While *MO Consequences* correlated with itself, *MO Information* and *MO Pairing* did not. These results also could be explained because of methodological reasons. Given the description of the category *MO Information* and the criteria to code a part of therapist speech as such, it is unlikely to register two of these motivating operations in a row. *MO Information* account not only for one verbalization but for a group of verbalizations of the same topic. It is not very likely that therapists address different topics one after another, and these results show that. In the case of the *MO Pairing*, a positive association among itself was also found, but it was not statistically significant. As mentioned before, the criteria for coding pairings is very strict, so it might occur that at this first stage of research (and also in a group design) some pairings could not be detected yet and, thus, the correlation between this category with itself it is being underestimated.

In any case, these results showed that these verbalizations are emitted together, which might indicate that they are used in specific moments in therapy and for common goals. These data also support the idea of these verbalizations having the same function and thus, they might be analyzed as a chunk. The codification of therapist verbal behavior using chunks has been shown to be useful in previous studies (Galván-Domínguez et al., 2020), providing a new level of analysis of the verbal interaction that can portray better what occurs during clinical sessions.

Associations of the motivating operations with clients' verbal behavior were also explored. In this regard, positive relations were found between these sorts of verbalizations and clients' agreement, specifically when the different motivating operations were combined. Although the category of *MO Information* showed a great association with the client's agreement, it also showed a great association with disagreement. By contrast, even if the degree of association between the combinations of motivating operations (*MO Information + MO Consequences* and *MO Information + MO Pairing*) showed a lower association with the client's agreement than the just mentioned association, they did not show any relation with the client's disagreement.

In the applied field, these results could be useful for therapists when they try to increase or decrease a client's behavior. The different effects that therapist's contingencies descriptions have on client's concurrence, could make therapists focus more on the anticipation of consequences and pairings than they used to do before. Giving general information is important and it is associated with desirable change, but in the light of these results more concrete specifications with an elicit component showed a greater relation with the client's agreement. Furthermore, therapists could benefit from the reconceptualization of motivation, losing the fear of directly motivating their clients. The distinction between extrinsic and intrinsic motivation does not seem to be valid when context accounts for all stimuli, either public or private. Also, the superior status of intrinsic motivation ceases to be useful when therapists know the mechanisms that explain why changes in behavior occur and are maintained out of the session without their presence. In this sense, the directivity of interventions does not necessarily diminish motivation, as stated by some authors (Lepper et al. 1973; Warneken & Tomasello 2014). By changing their concept of motivation, therapists could focus on the alteration of clients' context and not on the evaluation of their (de)motivation. In sum, therapists could gain greater efficacy and control in their treatments.

In the experimental field, these results make it necessary to pay attention to the study of the mechanisms that might explain this differential effect of MOs on clients' behavior change. From our point of view, studies that test the role of classical conditioning in verbal behavior and thus in verbal change are promising (Tonneau, 2004). Far from being a simple process, classical conditioning may contribute to the explanation of human complex behavior, for example, extra-therapeutic change. The emergence of behaviors not directly reinforced (e.g., transfer of functions) is key to understanding how the therapist can influence a client's behavior in an out-session context. Although operant processes are essential to understanding clinical change, proposals that dominate the field of human complex behavior research as RFT (Barnes-Holmes et al., 2001) are being questioned because of their enormous departure from their foundational principles (Sidman & Tailby, 1982), as well as the limited attention they paid to respondent principles (Tonneau, 2001).

Regarding the limitations of the study, the sample is the first thing to comment on. The size of it was smaller than previous studies of the therapeutic process (i.e., Ruiz-Sancho

et al., 2015), although at the same time it was a bit larger than specific studies of verbal MOs (de Pascual-Verdú & Trujillo-Sánchez, 2018). The number of sessions selected was because all cases must have sessions with all the clinically relevant activities, and due to different reasons, not all cases recorded had them. This could affect the number of verbalizations coded and thus the significance of some results. Although the cases were not selected attending to therapists or clients' characteristics, the impossibility of selecting them randomly from the bank could affect the results as well. In addition, recordings come from the same clinic, which means that the generalization of results is limited. Besides, this was not an experimental study, so the results could not be interpreted in terms of the efficacy of an intervention. The direct association between MO with elicit function should not be interpreted as if they cause clients' agreement. Further studies can experimentally manipulate the verbal behavior of the therapist and control the possible confounding

variables. A non-manipulative study like this one does not meet the requirements that the experimental analysis of behavior requires to label a behavior as elicit. Although inter-judge accordance guarantee objectivity, experimental studies are needed to test the function of the stimuli. Despite this, the results are promising concerning the incorporation of mechanisms like pavlovian processes into the study of motivation and the explanation of the clinical change.

References

Bakeman, R., & Gottman, J. M. (1997). *Observing interaction: An introduction to sequential analysis*. Cambridge University Press.

Bakeman, R., & Quera, V. (1995). *Analyzing interaction: Sequential analysis with SDIS and GSEQ*. Cambridge University Press.

Barnes-Holmes, D., Hayes, S. C., & Roche, B. (2001). The (not so) strange death of stimulus equivalence. *European Journal of Behavior Analysis*, *2*(1), 35-41. http://doi.org/10.1080/15021149.2001.11434166

Baum W. M. (2011). Behaviorism, private events, and the molar view of behavior. *The Behavior Analyst, 34*(2), 185–200. https://doi.org/10.1007/BF03392249

Clanton-Harpine, E. (2015). Is intrinsic motivation better than extrinsic motivation? In *Group-Centered Prevention in Mental Health* (pp. 87-107). Springer.

Cohen, J. (1960). A coefficient of agreement for nominal scales. Educational and Psychological Measurement, 20, 37–46. https://doi.org/10.1177/001316446002000104

Deci, E. L. & Ryan, R. M. (1975). *Intrinsic motivation*. John Wiley & Sons, Inc. https://doi.org/10.1002/9780470479216.corpsy0467

DeLeon, I. G., Anders, B. M., Rodriguez-Catter, V., & Neidert, P. L. (2000). The effects of noncontingent access to single-versus multiple-stimulus sets on self-injurious behavior. *Journal of Applied Behavior Analysis*, *33*(4), 623-626. http://doi.org/10.11133/j.tpr.2013.63.2.008

Delgado, D., & Rodríguez, A. (2020). Stimulus Equivalence Using a Respondent Matching-to-Sample Procedure with Verification Trials. *The Psychological Record, 22*, 1-9. https://doi.org/10.1007/s40732-020-00438-7

Dougher, M. J., & Hackbert, L. (2000). Establishing operations, cognition, and emotion. *The Behavior Analyst*, *23*(1), 11-24. http://dx.doi.org/10.1007/BF03391996

Eilifsen, C., & Arntzen, E. (2021). Mediated Generalization and Stimulus Equivalence. *Perspectives on Behavior Science*, *44*(1), 1-27. http://doi.org/10.1007/s40614-021-00281-3

Fagerstrøm, A., & Arntzen, E. (2013). On motivating operations at the point of online purchase setting. *The Psychological Record*, *63*(2), 333-344. http://doi.org/10.11133/j.tpr.2013.63.2.008

Fagerstrøm, A., & Ghinea, G. (2011). On the motivating impact of price and online recommendations at the point of online purchase. *International Journal of Information Management*, *31*(2), 103-110. https://doi.org/10.1016/j.ijinfomgt.2010.10.013

Frojián-Parga, M. X, Alpañés-Freitag, M., Calero-Elvira, A., & Vargas-De La Cruz, I. (2010). Una concepción conductual de la motivación en el proceso terapéutico [A behavioral conception of motivation in the therapeutic process]. *Psicothema*, *22*(4), 556-561.

Frojián-Parga, M. X., Montaño-Fidalgo, M., Calero-Elvira, A. & Ruiz-Sancho, E. (2011). Aproximación al estudio funcional de la interacción verbal entre terapeuta y cliente durante el proceso terapéutico [An approach to the study of functional verbal interaction between therapist and client] . *Clínica y Salud*, *22*(1), 69-85.

Galván-Domínguez, N., Alonso-Vega, J. & Froxán-Parga, M. X. (2020). Verbal aversive control in clinical interaction. *Psicothema*, *32*(2), 182-188.

Hayes, S. C., Barnes-Holmes, D., & Roche, B. (Eds.). (2001). *Relational frame theory: A post-Skinnerian account of human language and cognition*. Kluwer Academic/Plenum.

Keller, F. S., & Schoenfeld, W. N. (1950). *Principles of psychology: A systematic text in the science of behavior*. Appleton-CenturyCrofts.

Langthorne, P., McGill, P., & O'Reilly, M. (2007). Incorporating "motivation" into the functional analysis of challenging behavior: On the interactive and integrative potential of the motivating operation. *Behavior modification*, *31*(4), 466-487.

Laraway, S., Snycerski, S., Michael, J., & Poling, A. (2003). Motivating operations and terms to describe them: Some further refinements. *Journal of Applied Behavior Analysis*, *36*(3), 407-414. http://doi.org/10.1901/jaba.2003.36-407

Lepper, M. R., Greene, D., & Nisbett, R. E. (1973). Undermining children's intrinsic interest with extrinsic rewards: A test of the "overjustification" hypothesis. *Journal of Personality and Social Psychology, 28*, 129–137. http://dx.doi.org/10.1037/h0035519

Littell, J. H., & Girvin, H. (2002). Stages of change: A critique. *Behavior modification*, *26*(2), 223-273. http://doi.org/10.1177/0145445502026002006

Michael, J. (1982). Distinguishing between discriminative and motivational functions of stimuli. *Journal of the experimental analysis of behavior*, *37*(1), 149-155. http://doi.org/10.1901/jeab.1982.37-149

Michael, J. (2007). Motivating operations. In J. O. Cooper, T. E. Heron, & W. L. Heward (Eds.), *Applied behavior analysis* (2nd ed., pp. 374–391). Pearson Education.

Miller, W. R., & Rollnick, S. (1991). *Motivational interviewing: Preparing people to change addictive behavior*. Guilford Press.

de Pascual-Verdú, R. & Trujillo-Sánchez (2018). Estudio de la relación entre las verbalizaciones motivadoras y el seguimiento de instrucciones en la terapia psicológica [A study of the relation between motivational utterances and instruction compliance]. *Revista Clínica Contemporánea*, *9*(e14), 1-11. https://doi.org/10.5093/cc2018a11

de Pascual-Verdú, R. (2015). *La motivación en terapia: Un análisis funcional* (tesis doctoral) [*Motivation in therapy: a functional análisis (doctoral tesis)*]. Universidad Autónoma de Madrid, Madrid.

de Pascual-Verdú, R., Trujillo-Sánchez, C., Gálvez-Delgado, E., Andrés-López, N., Castaño-Hurtado, R. & Froxán-Parga, M.X. (2019). Sistema ACOVEO: Una propuesta funcional para el análisis de la interacción verbal en terapia [ACOVEO System: A functional proposal for the analysis of verbal interaction in therapy]. *Conductual*, *7*(2), 69-82.

Palmer, D. C. (2009). The role of private events in the interpretation of complex behavior. *Behavior and Philosophy*, *37*, 3–19.

Prochaska, J. O., & DiClemente, C. C. (1982). Transtheoretical therapy: Toward a more integrative model of change. *Psychotherapy: Theory, Research & Practice, 19*(3), 276–288. https://doi.org/10.1037/h0088437

Ruiz-Sancho, E., Froján-Parga, M. X. & Galván-Domínguez, N. (2015). Verbal interaction patterns in the clinical context: A model of how people change in therapy. *Psicothema*, *27*(2), 99-107.

Schlinger H. D. (1990). A reply to behavior analysts writing about rules and rule-governed behavior. *The Analysis of Verbal Behavior*, *8*, 77–82. https://doi.org/10.1007/BF03392849

Sidman, M. (2000). Equivalence relations and the reinforcement contingency. *Journal of the Experimental Analysis of Behavior, 74*, 127–146. http://doi.org/10.1901/jeab.2000.74-127

Sidman, M., & Tailby, W. (1982). Conditional discrimination vs. matching to sample: An expansion of the testing paradigm. *Journal of the Experimental Analysis of Behavior*, *37*(1), 5-22.

Skinner, B. F. (1953). *Science and human behavior*. The Free Press.

Skinner, B. F. (1957). *Verbal behavior*. Appleton Century-Crofts.

Staats, C. K., & Staats, A. W. (1957). Meaning established by classical conditioning. *Journal of experimental psychology*, *54*(1), 74. http://dx.doi.org/10.1037/h0047716

Tonneau, F. (2001). Equivalence relations: A critical analysis. *European Journal of Behavior Analysis*, *2*(1), 1-33. http://doi.org/10.1080/15021149.2001.11434165

Tonneau, F. (2004). Verbal understanding and pavlovian processes. *The Behavior Analyst* Today, 5, 158-169. http://doi.org/10.1037/h0100029

Tonneau, F., Arreola, F., & Martínez, A. G. (2006). Function transformation without reinforcement. *Journal of the Experimental Analysis of Behavior*, *85*(3), 393-405. http://doi.org/10.1901/jeab.2006.49-05

Vargas-de la Cruz, I., Pardo-Cebrián, R., Martínez, H. & Froján-Parga, M. X. (2017). Las verbalizaciones tipo regla del terapeuta a lo largo del proceso clínico [The therapist's rule-type verbalizations throughout the clinical process]. *Universitas Psychologica*, *16*(1), 25-39.

Vaughan, M. E. (1989). Rule-governed behavior in behavior analysis: A theoretical and experimental history. In S. C. Hayes (Ed.), *Rule-governed behavior. Cognition, contingencies and instructional control* (pp. 97-118). Plenum Press.

Warneken, F., & Tomasello, M. (2014). Extrinsic rewards undermine altruistic tendencies in 20-month-olds. *Motivation Science, 1*, 43–48. http://doi.org/10.1037/2333-8113.1.S.43