

EMPIRICALLY GROUNDED CLINICAL INTERVENTIONS

What works in the Socratic debate? An analysis of verbal behaviour interaction during cognitive restructuring

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Abstract

Background: Cognitive restructuring is one of the most complex application procedures in psychotherapy. It is widely used by psychologists from different orientations. However, the guidelines on how to apply it do not usually have empirical evidence and there is a lack of knowledge about the mechanisms of change that explain it.

Aims: The analysis of verbalizations that therapists emit during the Socratic method could help to better understand the functioning and strategies of effective debates.

Method: In this study, specific verbal interaction sequences were analysed using observational methodology. The sample consisted of 113 Socratic questioning fragments belonging to 18 clinical cases, treated by behavioural therapists.

Results: Among other findings, it was found that using questioning together with certain previous verbalizations directed the client's response more effectively and those successful debates were characterized by using the aversive component in a frequent and contingent way.

Conclusion: This study shows the most effective way to establish such an interaction in the Socratic method (following a style closer to Ellis's argumentative debate), which entails relevant practical applications in therapy.

Keywords: cognitive restructuring; effectiveness; Socratic method; verbal behaviour; verbal interaction

Introduction

Cognitive restructuring is a psychological intervention technique that includes a set of procedures oriented to teach clients¹ how to evaluate, identify and change their maladaptive thoughts (Bados and García, 2010; Clark, 2013). Among all psychological intervention techniques, cognitive restructuring is one of the most used by therapists. Although it is considered a cognitive behavioural therapy (CBT) technique, it is widely used by psychologists from different orientations, backgrounds and experience (American Psychological Association, 2003; Pardo-Cebrián and Calero-Elvira, 2017).

Despite its wide use, cognitive restructuring has a lack of clarity regarding its procedures, applications and therapeutic mechanisms that explain it (Carey and Mullan, 2004; Clark and Egan, 2015). One of the most relevant components of cognitive restructuring is the Socratic method, usually understood as a verbal questioning procedure of the client's maladaptive

¹The terms client and patient are used interchangeably throughout this article.

verbalizations.² This procedure is not as structured as others, although there are several proposals regarding the type of questions to be asked and how it should be done. Probably Beck's approach is the most frequently applied. This author suggested that there are three main categories of questioning: evidence, severity and utility (O'Donohue and Fisher, 2012).

However, there is no solid theoretical argument or empirical evidence that a specific type of question or strategy leads to better results. Moreover, not even the evidence itself about the efficacy of the debate is conclusive. Even though there are studies about the efficacy of cognitive restructuring as a technique, which supports its efficacy with different problematics (Carpenter *et al.*, 2018; DeRubeis *et al.*, 2005; Ladouceur *et al.*, 2000), this research is often conducted on 'treatment packages', rather than on the effects of cognitive restructuring in isolation. So far, there is little research covering the efficacy of the Socratic method. In fact, only two studies support the importance and benefits of using the Socratic method in the results of the treatment (Braun *et al.*, 2015; Farmer *et al.*, 2017). Nevertheless, these studies do not provide theoretical explanations, and only process research can shed light on this matter.

Among the process research literature that tries to explain the functioning of cognitive restructuring, we highlight a line of study focused on verbal interaction analysis in the clinical context from a behavioural approach. This line of study makes a scientific approach to the explanation of why clinical change occurs in therapy based on observational methodology (see Froján-Parga *et al.*, 2010; Froján-Parga *et al.*, 2011; among others). According to this work, the Socratic method could be understood as a procedure of verbal shaping, whereby the therapist manages to direct the client to more adaptive verbalizations through the differential verbal reinforcement of the client's utterances that approach the therapeutic objective and the extinction or punishment of those that are moving away from it (Calero-Elvira *et al.*, 2013). It was also found that, in the most successful debates, when therapists asked questions preceded by certain information, clients' verbalizations approached the objective pursued. Recent research from this line of study (Froján-Parga *et al.*, 2018) shows the need to attend to and explain therapists' verbalizations considering this potential informative function and focusing on specific contents of the Socratic method to know if there is a more effective way to question (Calero-Elvira, 2009). Although these findings were a breakthrough, there are still some aspects to be understood concerning the functioning of the Socratic method that may significantly improve the clinical outcome: what is the role of questions aimed at challenging logic? What kind of verbalizations preceding the questions discriminates better client responses? Are there more effective debate components or strategies than others?

The objective of this study was to analyse the verbal interaction between therapist and client during the Socratic method, and its relationship with the effectiveness of the questioning by examining the role that antecedent strategies have in generating more adaptive verbalizations by clients. This study also intended to enlighten whether some of the proposals suggested by classical authors regarding the Socratic method leads to greater effectiveness. Specifically, we analyse the Socratic method following a style closer to Ellis's argumentative debate.

For this study, we considered the following hypotheses:

Hypothesis 1. Regarding the ways of questioning:

- a. The questioning would change throughout the debate. In the first and second part of the Socratic method there would be more questions that challenge evidence and logic (*questioning validity*) and in the third part questions that challenge severity and/or utility (*questioning severity* and *questioning utility*).
- b. There would be no relationship between following this specific order of questioning and the effectiveness of the Socratic method.

²Henceforth, the terms debates and Socratic method will be used to refer to this global definition, as there is a great confusion about the terminology in scientific literature.

- c. Debate questions preceded by other verbalizations such as *explaining, motivating* and *using analogies* would discriminate patient responses *approximating* the therapeutic objective (VAT) and would not discriminate patient's responses *opposing* this objective (VOT) or *intermediate* with respect to the objective (VIT), as opposed to questioning without such verbalizations.

Hypothesis 2. Regarding the use of the aversive component by the therapist:

- a. It would appear more frequently in *total success* Socratic questioning fragments.
- b. In successful fragments, therapists would contingently use the aversive component on patients' VOT.
- c. Therapist's verbalizations (*questioning, explaining, using analogies, motivating*) accompanied by the aversive component would discriminate patient's VAT, and not VIT or VOT, with a higher probability than expected by chance, unlike therapist verbalizations without the aversive component.

Hypothesis 3. Regarding the different ways of explaining, clients would be more likely to produce VAT after the therapists' technical explanations (*explaining in a technical manner*) and not VOT or VIT, unlike responses following non-technical explanations (*explaining in a non-technical manner*).

Hypothesis 4. Regarding *training in reasoning rules*: motivating verbalizations and reasoning rules would tend to appear together in *total success* Socratic questioning fragments and would discriminate patient's VAT and not VOT or VIT.

Design

This study is a quantitative, cross-sectional study through observational methodology.

Method

Sample

We analysed 113 video recordings of Socratic questioning fragments from 18 clinical cases and 11 therapists with different levels of professional experience. All the therapists had a behavioural orientation and performed their clinical practice in a private psychological centre. Although therapists had not been trained in a specific Socratic style, the way it was applied was more similar to Ellis' classic argumentative style. People who requested psychological help were adults and received individual psychological treatment. Regarding the sample characteristic, in total, the duration of the verbal interactions analysed was 10 hours, 6 minutes and 39 seconds. Concerning the therapists, 90.9% were women, the average number of experience years of the experts was 10.3 years and 1.3 for the inexperienced. With regard to the participant characteristics, the mean age was 28.7 years and 77.7% of the participants were women. The problems for which they came to consultation were: depression (33.3%); marital problems (16.6%); hypochondria (11.1%); workplace issues (11.1%); eating disorder and body image (11.1%); social skills (5.5%); relationship problems (5.5%); general affective problems (5.5%).

Instruments

Therapist verbal behaviour during Socratic fragments were categorized according to the *Therapist System of Categories* developed *ad hoc* for this study. In the Appendix (Supplementary material), definitions and examples for these categories are given.

Patient utterances were coded following the *Patient System of Categories* developed in Calero-Elvira *et al.* (2013). Table 1 shows definitions and examples for these categories (Calero-Elvira *et al.*, 2013, p. 628).

Table 1. Patient system of categories

Categories	Definitions and examples
VAT	Any verbalization that approximates the therapeutic objective of the Socratic method, e.g. Therapist: 'Do you think that you are generally good at your job?' Patient: 'Yes, in general I do many things right, such as my data analyses, reports and customer contact, and I only rarely do them wrong. The only thing at which I'm not good is speaking in front of an audience, but I seldom have to do that.'
VOT	Any verbalization that opposes the therapeutic objective of the Socratic method, e.g. Therapist: 'Do you think that you are generally good at your job?' Patient: 'Not at all.'
VIT	Any verbalization intermediate with respect to the therapeutic objective of the Socratic method, e.g. Therapist: 'Do you think that you are generally good at your job?' Patient: 'A little bit of both, I think. Speaking in front of an audience is something at which I'm quite bad, and there are other things at which I'm good.'
Others	Any verbalization that cannot be included in any of the preceding categories, e.g. Therapist: 'Do you think that you are generally good at your job?' Patient: 'And what do you think?'

These examples come from a case in which the therapist has previously made sure that the patient is, most of the time, good at his job, and has had it corroborated by his boss via report. This patient starts with utterances that go along the lines of 'I'm not good at my job', 'I don't do anything right in my job'. It is worth mentioning that the Socratic method exemplified here resembles more closely Ellis's more persuasive style than the didactic approach of Beck. Reprinted from Calero-Elvira, A., Froján-Parga, M. X., Ruiz-Sancho, E. M., & Alpañés-Freitag, M. (2013). Descriptive study of the Socratic method: evidence for verbal shaping. *Behavior Therapy, 44*, 625–638. <https://doi.org/10.1016/j.beth.2013.08.001>

Finally, each debate fragment was categorized according to the Verbal Effectiveness Scale developed in Calero-Elvira *et al.* (2013) (p. 629). A debate episode was classified as *Total success* on occasions when the client expressed a verbalization that approached the debate goal at least once in an emphatic way (e.g., 'yes, definitely'), without later contradiction. The debate was classified as *Partial success* on occasions when the patient expressed a verbalization that approximated to the debate goal but did it without emphasis or was later contradicted. Debate *Failure* was classified when none of the patient's verbalizations approximated the therapeutic debates objective, or a patient's verbalization approximated the therapeutic objective without emphasis and was later contradicted by another verbalizations (e.g. 'no, I do not think so').

All session fragments were observed and coded through *The Observer XT 12.5* software (Noldus). This software was also used for the calculation of percentage of agreement and inter- and intra-rater reliability index. The *Generalized Sequential Quierier 5.1* (GSEQ) (Bakeman and Quera, 1995) was used for sequential analysis of recorded data and *SPSS Statistics 22* (IBM) for other statistical analysis of the data.

Procedure

Development of the Therapist System of Categories

This study was based on previous work with the same methodology and subject: verbal interaction analysis during the Socratic method in cognitive restructuring; and more precisely on its categorization system (Calero-Elvira *et al.*, 2011; Calero-Elvira *et al.*, 2013; Froján-Parga *et al.*, 2011). The present study delves into some of the categories not previously explored in order to test new hypotheses. Observations and transcripts of debate fragments were initially made by three different observers: Observer 1, an expert psychologist in behaviour therapy and in verbal behaviour analysis in therapy with clinical experience; and Observers 2 and 3, graduates in psychology with clinical training. Meetings were held periodically with a fourth expert psychologist in behaviour therapy, verbal behaviour analysis in therapy and cognitive restructuring. The definitions of the categories were discussed until a preliminary categorization system was created. At that point, Observer 2 began to categorize the debate fragments that Observer 1 had registered and the percentages of agreement and the Cohen's

kappa coefficient of the fragments were calculated. The final version was achieved once the appropriate agreement levels and kappa coefficient were reached (Cohen's κ , 0.53 to 0.92).

Training in and reliability of the Patient System of Categories and effectiveness of the Socratic method

To analyse patient's behaviour and the effectiveness of the Socratic questioning fragments, it was not necessary to elaborate new systems of categories, as existing categorization systems were used. Instead, Observers 1 and 2 were trained in the following systems: the *Patient System of Categories* and the *Verbal Effectiveness Scale* (Calero-Elvira *et al.*, 2013). They were trained in the use of these categorization systems until they achieved at least 10 consecutive sessions for the *Patient System of Categories* with a Cohen's kappa coefficient of at least 0.60. According to Bakeman (2000) and Landis and Koch (1977), this is the minimum value to consider an agreement as good. As for the *Verbal Effectiveness Scale*, a concordance coefficient that was not less than 0.80 in at least six consecutive records was needed. This value was taken as criteria as the interclass coefficient correlation (ICC) values can range between 0 and 1 and those that exceed 0.80 are considered optimal (Quera, 1997).

Sample registration

The sample was registered once adequate levels of reliability were guaranteed for all categorization systems. Observers 1 and 2 were responsible for recording the total sample of this study and it should be noted that only Observer 2 was blind to the study's hypotheses. Reliability analysis was submitted to more than 10% of the total study sample and records were kept as long as the level of reliability achieved was at least 0.60 (Cohen's κ , 0.61 to 0.90). The effectiveness of the debate fragments was recorded using the *Verbal Effectiveness Scale* submitting the reliability analysis to more than 10% of the total study sample. The ICC was 0.947 ($F = 18.78$, $p = < 0.001$) for intra-rater comparisons and for inter-rater comparisons the value was 1.00 (as the determinant of the covariance matrix is 0, the statistics program SPSS does not calculate the value of the F -test or the critical value of the statistic p).

Results

Global exploratory analysis

Therapists' most frequently used verbalizations throughout the Socratic method were *explaining* (mean = 57.17, $SD = 49.46$), *questioning* (mean = 36.00, $SD = 60.49$) and *exploring* (mean = 13.50, $SD = 13.26$). These were followed by *providing target verbalization* (mean = 4.94, $SD = 49.46$) and *using analogies* (mean = 4.33, $SD = 5.90$). In contrast, *motivating* (mean = 3.56, $SD = 3.50$) and *training in reasoning rules* (mean = 1.50, $SD = 1.92$) were the less used utterances. In terms of effectiveness of the Socratic fragments, 62.83% were *total success*, 24.78% *partial success* and 12.39% *failure*.

Regarding client's verbal behaviour, dividing the debate into three parts allowed us to appreciate the evolution of client's responses in relation to the objectives of the debate: patient's responses *approximating* the therapeutic objective (VAT) increased throughout the debate (first part = 44.49%; second part = 53.14%; third part = 64.58%). In contrast, client responses *opposing* the therapeutic objective (VOT) decreased towards the end (first part = 24.78%; second part = 19.89%; third part = 10.12%). Similarly, client responses *intermediate* with respect to the therapeutic objective (VIT) decreased, but at a lower rate (first part = 30.73%; second part = 26.7%; third part = 25.30%).

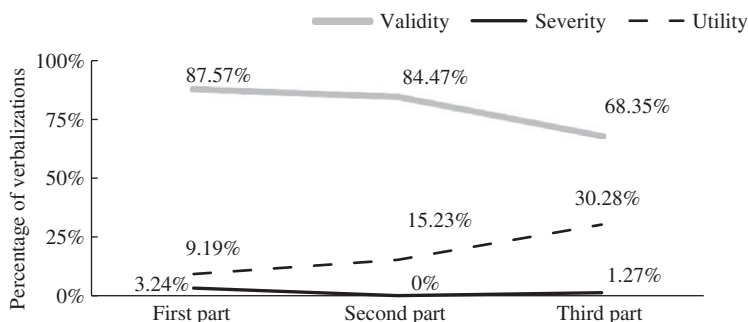


Figure 1. Types of questioning throughout the debate. On the vertical axis, the percentage that corresponds to each questioning category that the therapist uses is shown. On the horizontal axis, the use of these verbalizations throughout the debate is described.

Regarding the different ways of questioning (Hypothesis 1)

In relation to Hypothesis 1(a), *questioning validity* was the most used strategy in contrast to *questioning severity* or *utility* (as shown in Fig. 1). Results also showed how the questioning changes throughout the debate: *questioning validity* decreased, and *questioning severity* and *utility* increased towards the end. According to the Friedman test, results were statistically significant for verbalizations aimed at *questioning validity* ($\chi^2 = 209.41$, $p = 0.000$), but not for those aimed at *questioning utility* ($\chi^2 = 0.347$, $p = 0.841$) or *severity* ($\chi^2 = 1.727$, $p = 0.422$). In order to identify where the differences were, a Wilcoxon test was conducted. We found that the differences in *questioning validity* were between the first and third part of the Socratic method ($z = -3.743$, $p = 0.00$) and between the second and the third part ($z = 2.645$, $p = 0.008$). There were no differences between the first and the second part ($z = -1.92$, $p = 0.55$).

Regarding Hypothesis 1(b), a nominal variable (*order*) was created. Debates in which *questioning validity* appeared in the first or second part (but not in the third part), and *questioning severity* and *utility* appeared in the second or third part (but not in the first part), were classified as following an order. No relationship was found between following an order in the sequencing of questions and the success of the debates ($\chi^2 = 1.78$, $p = 0.411$).

In relation to Hypothesis 1(c), results showed that *using analogies*, *explaining in a technical manner* and *motivating before questioning* were followed by VAT and not VIT or VOT. *Explaining in a technical manner* prior to *questioning* discriminated VAT and not VIT with a higher probability than expected by chance. In contrast, *explaining in a non-technical manner* before *questioning* discriminated both VAT and VIT. When strategies aimed at questioning were not preceded by any of these categories, the patient's response could be followed by VAT, VOT or VIT. Table 2 shows the statistics of these results.

Regarding the use of the aversive component by the therapist (Hypothesis 2)

In relation to Hypothesis 2(a), there were no statistically significant differences between the frequency of use of the aversive component and the success of the debate (Kruskal-Wallis; $\chi^2 = 3.806$, $p = 0.15$).

Regarding Hypothesis 2(b), results showed that in *total success* fragments, therapists tended to use the aversive component after patients' VIT and VOT, and not after VAT (as shown in Fig. 2). In contrast, this pattern was inverted for *failure* fragments. In *partial success* fragments, therapists used the aversive component only after patient's VOT.

Table 2. Verbalizations that precede questioning and that discriminate the patient’s response

	E. technical	E. non-technical	Using analogies and questioning	Motivating	Training in RR	Providing target V.	Questioning
VAT	$R = 5.95^{**}$ $Q = 0.81$	$R = 9.29^{**}$ $Q = 0.68$	$R = 4.98^{**}$ $Q = 0.85$	$R = 2.77^{**}$ —	$R = 0.69$ —	$R = 2.58^{**}$ $Q = 0.82$	$R = 15.77^{**}$ $Q = 0.62$
VIT	$R = 1.51^*$ $Q = -1.00$	$R = 2.07^*$ $Q = 0.24$	$R = -0.98$ $Q = -0.45$	$R = -0.70$ —	$R = 1.46$ —	$R = 0.38$ $Q = 0.21$	$R = 3.21^{**}$ $Q = 0.20$
VOT	$R = -2.15$ $Q = 0.35$	$R = 0.94$ $Q = 0.14$	$R = 0.31$ $Q = 12$	$R = -0.56$ —	$R = -0.46$ —	$R = -0.73$ $Q = -1$	$R = 10.95^{**}$ $Q = 0.57$

Q = Yule’s Q; R = adjusted standardized residuals (significant: <-1.96; >1.96); E., explaining; RR, reasoning rules; V., verbalization. Yule’s Q could not be calculated for some series (—) due to lack of enough sequences. However, there are two indicators: adjusted residuals and *p*-value, which allow this result to be assessed. **p* < 0.05, ***p* < 0.01.

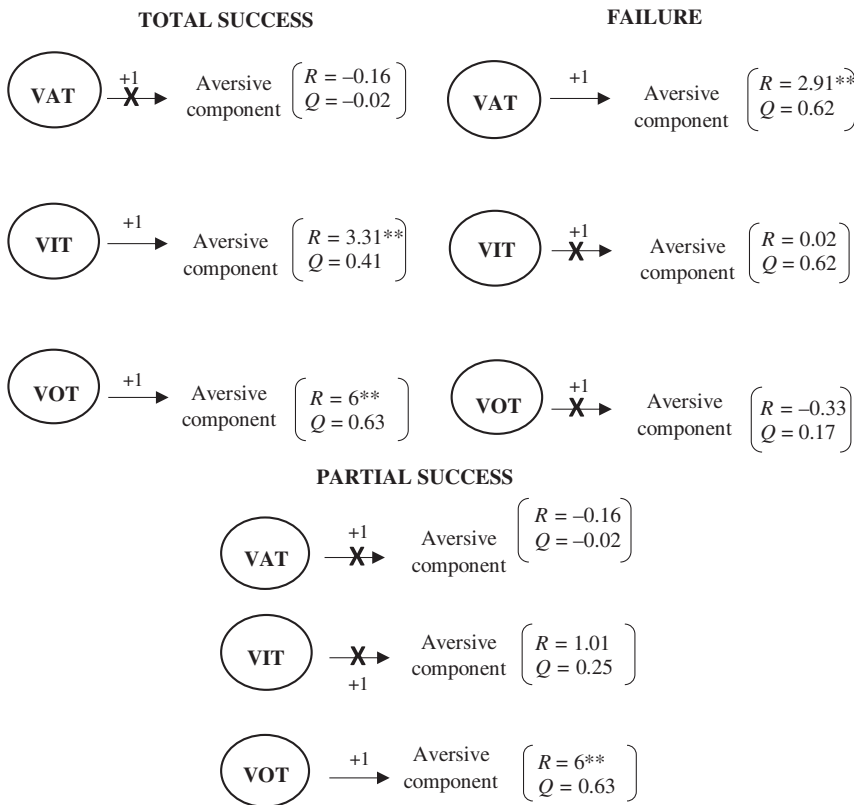


Figure 2. Transition diagrams interaction of aversive component. Q = Yule’s Q; R = adjusted standardized residuals (significant: <-1.96, >1.96). ***p* < 0.01.

In relation to Hypothesis 2(c), the use of the aversive component was found with a higher probability than expected by chance linked to *using analogies* ($R = 10.72$, $Q = 0.85$, $p = 0.01$), *explaining* ($R = 6.65$, $Q = 0.57$, $p = 0.01$) and *questioning validity* ($R = 4.47$, $Q = 0.46$, $p = 0.01$). Among them, both *questioning validity* and *explaining* discriminated patient’s VAT and not VOT or VIT (as shown in Table 3). This was not the case when these categories were given without the aversive component. *Questioning validity* without the

Table 3. Therapist's verbalizations accompanied by the aversive component

	Explaining	Validity	Analogies	Explaining	Validity	Analogies
	and aversive component					
VAT	$z = 3.67^{**}$ $Q = 0.46$	$z = 4.02^{**}$ $Q = 0.62$	$z = -0.19$ $Q = -0.05$	$z = 14.65^{**}$ $Q = 0.50$	$z = 18.03^{**}$ $Q = 0.67$	$z = 2.17^*$ $Q = 0.27$
VIT	$z = 0.52$ $Q = 0.10$	$z = 1.23$ $Q = 0.27$	$z = -1.58$ $Q = -1.00$	$z = -0.02$ $Q = 0.00$	$z = 11.05^{**}$ $Q = 0.21$	$z = -2.08^*$ $Q = -0.53$
VOT	$z = -0.27$ $Q = -0.07$	$z = 1.62$ $Q = 0.37$	$z = -1.27$ $Q = -1.00$	$z = 2.26^*$ $Q = 0.14$	$z = 3.50^{**}$ $Q = 0.56$	$z = -1.67$ $Q = -0.52$

Q = Yule's Q; z = adjusted standardized residuals (significant: < -1.96 ; > 1.96). * $p < 0.05$, ** $p < 0.01$.

aversive component discriminated any patient's verbalization (VAT, VOT or VIT) and *explaining* without this component discriminated both VAT and VOT. Finally, contrary to what it was expected, *using analogies* without the aversive component did discriminate VAT and not VIT or VOT. In contrast, this pattern was not found when *using analogies* was accompanied by the aversive component.

Regarding the different ways of explaining (Hypothesis 3)

Sequential analysis of the verbal interaction between therapist explanations and patient responses showed that when therapist explanations were technical (*explaining in a technical manner*), client next responses were VAT ($R = 10.13$, $Q = 0.54$, $p = 0.01$) and not VOT ($R = -1.62$, $Q = -0.20$, $p = 0.11$) or VIT ($R = 0.87$, $Q = -0.10$, $p = 0.30$). In contrast, when therapist explanations were non-technical (*explaining in a non-technical manner*), client responses were both VAT ($R = 10.28$, $Q = 0.40$, $p = 0.01$) and VOT ($R = 3.57$, $Q = 0.22$, $p = 0.01$), but not VIT ($R = 0.87$, $Q = 0.05$, $p = 0.38$).

Regarding training in reasoning rules (Hypothesis 4)

In *total success* Socratic fragments, therapists trained in *reasoning rules* before *motivating* (delay of -1) had a higher probability than expected by chance ($z = 5.68$; $Q = 0.88$; $p < 0.01$), considering that adjusted standardized residuals were significant = < -1.96 ; > 1.96 . This pattern was not found in *partial success* fragments ($z = 1.52$; $Q = 0.63$) or *failure* fragments ($z = -0.07$). However, these verbalizations did not discriminate VAT ($R = 1.35$, $p = 0.18$), VOT ($R = -0.47$, $p = 0.64$) or VIT ($R = -0.64$, $p = 0.52$). Yule's Q statistic could not be calculated due to the lack of three-term sequences: *training in reasoning rules* followed by *motivating* and followed by client verbalizations.

Discussion

Findings from this study provide a detailed view of how therapists' and clients' verbal behaviour works during the Socratic method, and the most effective way to establish it when it is conducted in an argumentative style. We found: (1) a certain pattern in the sequencing of questions when questioning throughout the debate; (2) that the use of explanations, analogies and motivational verbalizations prior to *questioning* directs a client's response more effectively; (3) using the aversive component when questioning and explaining discriminates patient responses *approximating* the therapeutic objective (VAT); (4) using technical versus non-technical explanations also discriminate patient VAT; and (5) successful Socratic fragments are characterized by linking the *training in reasoning rules* with *motivating* verbalizations and by

using the aversive component contingently on client responses. Results are discussed below point by point.

Explaining and *questioning* are the main types of therapist verbalizations in the Socratic method. In particular, the way of questioning changes throughout the debate: questions that challenge evidence and logic (*questioning validity*) are most often asked at the beginning and in the middle of the Socratic method, showing statistically significant differences between the first and third part. In addition, questions that challenge utility (*questioning utility*) increase during the second part and even more in the third part of the debate, although these differences were not statistically significant. These results allow us to partially confirm Hypothesis 1(a) and are in line with the data found in the survey study of Pardo-Cebrián and Calero-Elvira (2017): 92.3% of the clinicians reported that they used these types of questions (*questioning validity*, *severity* and *utility*) in the debate and almost half of them began by questioning validity, and then continued by questioning severity and utility. Although this seemed to be a characteristic pattern, there is no relationship between following this order when questioning and the effectiveness of the Socratic method, which leads us to confirm Hypothesis 1(b). This shows that some authors have pointed out the relevance of question sequencing in the Socratic method without supporting evidence (e.g. James and Morse, 2007). Even Beck suggests following a careful order in the sequencing of questions (Beck *et al.*, 1979). The present study shows for the first time with empirical data that: (1) this pattern of question sequencing occurs in the application of the debate, but (2) such sequencing is not related to the Socratic method success. As we predicted, following an order does not have to imply a better functioning for this technique, although the use of questions that challenge the validity and consequences may be relevant.

By far the most used questions are those aimed at questioning the validity of client utterances. The Socratic method could be understood as problem-solving training, in which therapists help clients to reason effectively. This problem-solving training has an elementary content related to logic in argumentation, probably because our verbal community teaches us to think and debate in this way (Pérez Fernández *et al.*, 2010). Therefore, it is elementary to use questions aimed at challenging validity, as this is the way we have learned to solve problems.

As the Socratic method evolves, questions about validity decrease and those aimed at questioning the utility of client utterances are more often used. Probably, therapists employ utility and severity questions after client verbalizations that have not been completely modified, or to emphasize and strengthen those who have. Therapists would do this through establishing or abolishing operations: discriminating clients' descriptions about the consequences of maintaining or changing those responses (e.g. 'How does thinking like that help you?', 'What would be the consequences of stopping thinking like this?').

Regarding the strategies that precede *questioning*, we found that debate questions preceded by other verbalizations such as *using analogies*, *explaining in a technical manner* and *motivating* discriminate VAT and not VIT or VOT, as opposed to when questioning is used without such verbalizations. This result is in line with previous findings which showed that when therapists' questions were accompanied by an informative or motivating verbalization, clients were more likely to respond VAT compared with cases in which they were not preceded by them (Calero-Elvira *et al.*, 2013). Therefore, Hypothesis 1(c) is partially supported, as the expected result only occurred when they were technical explanations and not when they were non-technical. So, verbalizations that precede *questioning* in the Socratic method include elements that perform certain functions. These verbalizations (*using analogies*, *explaining in a technical manner* and *motivating*) probably have elements in common with each other: they describe appetitive or aversive contingencies, present desirable alternative verbalizations, etc. What may be fulfilling various antecedent control functions to make it more likely that the desired response will be given: establishment and abolition operations, and stimulus control.

One key element in the Socratic method is the way (or style) in which the client's verbalizations are questioned or directed, where the use of the aversive component has a key role. Authors like Ellis (Ellis and Grieger, 1977) propose a very active verbal style of confrontation in which they often used irony. Instead, other experts in this field, such as Beck or Padesky, consider confrontation as something negative that will generate unpleasant emotional reactions in clients (Kazantzis *et al.*, 2014). So far, there is little evidence of the effect of the style in changing clients' verbalizations, besides the above-mentioned studies on verbal shaping (Calero-Elvira *et al.*, 2013). These results show that there are no differences in the success of the debate according to the frequency of use of the aversive component, which leads us to reject Hypothesis 2(a). However, by analysing the interaction there are differences in the use of the aversive component according to the success of the Socratic questioning. In *total success* fragments, the aversive component is used contingently on patient's VOT and VIT, which leads us to support Hypothesis 2(b). This result is consistent with the findings of the research that preceded this study (Calero-Elvira *et al.*, 2013). In that study, differences in the effectiveness of the debate were found in therapists' utterances before patients' VIT: in *total success* fragments therapists reinforced and punished these intermediate verbalizations, in *partial success* fragments therapists only reinforced them and in *failure* fragments they neither reinforced nor punished them. Furthermore, the present study provides an additional result: in *failure* fragments, therapists not only do not use the aversive component contingently on patients' VOT or VIT, but they use it contingently on patients' VAT. This evidence supports that the use of the aversive component in the Socratic method, in the context of this therapists' sample and following an argumentative debate style, could be a fundamental element for its success.

Additionally, the aim of the present study was to contrast how the aversive component is used in the Socratic method with other therapist' verbalizations, following some lines of study about the aversive control in therapy (Pereira *et al.*, 2019). In that work it was suggested that therapists use aversive associations to condition stimuli that take place in other context and temporal moments, as the processes involved in aversive control include both classical and operant conditioning principles. We found that some therapist's utterances, such as *explaining* and *questioning validity*, when used together with an aversive component, discriminate only patient VAT and when used without such component discriminate responses of any kind (VAT, VOT or VIT). This partially confirms Hypothesis 2(b), as *using analogies* with the aversive component does not discriminate patient VAT but used without this component it indeed discriminates VAT or VIT.

Regarding the different ways of explaining, we found that *explaining in a technical manner*, in which clients are informed about functional aspects of the behaviour, seems to better direct patients' responses (VAT), unlike when *explaining in a non-technical manner*. This result allows us to confirm Hypothesis 3. A fundamental objective in the debate is to ensure that clients know how to attribute causes of what is happening in a rational way. In many cases, the change to a more rational verbalization goes through understanding and explaining the functioning of the behaviour and this necessarily involves technical explanations given by the therapist. The goal of changing irrational verbalizations to more rational ones is an adjustment in the function they perform. In many cases, when clients emit irrational verbalizations, these work as an escape response from the emotional distress caused by the uncertainty of not understanding why something is happening or by avoiding issuing an aversive verbal description. When we manage that the clients issue a verbal description of the contingencies that control their behaviour based on functional analysis, it is possible that the control that the verbal contingencies exerted on their behaviour weakens because, from that moment on, each time they perform the dysfunctional behaviour, they will be exposed to the contingency of punishment or aversive stimulation that is being incongruent (Carrasco and Pardo, 2018).

Finally, in *total success* Socratic questioning fragments, *training in reasoning rules* tended to appear together with *motivating* verbalizations that pointed out the consequences that such verbal behaviour will have. These results are consistent with findings from other studies in which it was found that following instructions was more likely when instructions and establishment operations were given together (De Pascual Verdú and Trujillo Sánchez, 2018; Marchena-Giráldez *et al.*, 2013). On the other hand, in the present study it was not found that such sequencing discriminates patients' VAT, or any other type. This is probably due to the limited sample size: the frequency of *training in reasoning rules* or *motivating* is lower than the frequency of *questioning* or *explaining* in the Socratic method. This partially confirms Hypothesis 4. So, describing the consequences of thinking rationally is an effective verbalization pattern to achieve a change in clients' utterances. In addition, in our social context, being coherent and rational is usually appetitively associated.

The present study has certain limitations and it is important to note that this is not an experimental or controlled study, so the conclusions are based on correlational results. First, the study sample did not allow the analysis of some interaction sequences that occurred with little frequency. Another important limitation relates to the lack of control over patient compliance responses. Sometimes, clients may respond favourably in Socratic method just because an authority figure is disputing, so it would have been appropriate to assess the social desirability of clients. In addition, it would have been appropriate to verify whether changes in clients' verbalizations also imply clients' changes out of session. For future studies it would be desirable to extend the sample and include a greater variability of cases with clinical problems in order to generalize the conclusions of the results. It would also be interesting to analyse other debate styles, such as guided discovery, in order to know which principles are followed and the differential effectiveness of each style. On the other hand, the categories of our coding system cannot be considered functional.

Given the results of this work, the next steps that could follow this research are as follows. On the one hand, in addition to incorporating the above-mentioned improvements, the study of expert and inexperienced therapists could yield interesting data on the mastery of verbalizations and procedures used in this technique. On the other hand, it could be very interesting to incorporate more precise theoretical approaches on the role of language and the learning principles involved in analogies, theoretical explanations, or reasoning rules. More and more techniques addressing thoughts are being developed, but the clinical advance could be in finding the common learning principles underlying these treatment methods.

Despite these limitations, this study entails a contribution to the creation of guidelines for clinicians on how to apply one of the most used, but less guided psychological intervention techniques, based on empirical evidence and theoretical analysis.

Supplementary material. To view supplementary material for this article, please visit: <https://doi.org/10.1017/S1352465820000880>

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