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Guidelines for clinical case reports in behavioral clinical Psychology[1]

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ABSTRACT. This theoretical study describes guidelines for writing clinical case reports in cognitive-behavioral therapy, behavior therapy and applied behavior analysis. Emphasis is laid upon the constraints to be applied in order to enhance the validity of clinical case reports. Lack of validity is a common shortcoming in clinical case reporting which limits research results interpretation and usability. A number of suggestions are made throughout the manuscript in order to strengthen single-subject designs validity. The manuscript makes the case for the contribution of clinical case reports to clinical research and empirically-based clinical practices. Guidelines for drawing up clinical case report are given. The following manuscript sections are suggested: abstract, introduction, patient identification and reason for referral, assessment strategies, clinical case formulation, treatments, study design, data analysis, effectiveness and efficiency of the intervention, and discussion. The paper provides a general and flexible framework for each of these areas. Consistency with the constraints of common clinical practices and settings is intended.

KEY WORDS. Guidelines. Single-case experiment. Case studies. Case series. Clinical case formulation. Theoretical study.

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RESUMEN. El presente estudio teórico es una guía para la redacción de informes de casos clínicos en terapia cognitivo-conductual, modificación de conducta y análisis aplicado del comportamiento. La falta de validez es una limitación frecuente en los informes de casos clínicos; ello limita la interpretación y uso de los resultados de investigación. El artículo ofrece guías específicas a objeto de mejorar la validez de informes de casos clínicos y los diseños de caso único. El manuscrito llama la atención sobre la contribución de los informes de casos en la investigación clínica y en el desarrollo de prácticas clínicas apoyadas en evidencias. Se ofrecen guías para la preparación de casos clínicos siguiendo la siguiente estructura de secciones: resumen, introducción, identificación del paciente y motivo de referencia, estrategias de evaluación, formulación clínica del caso, tratamientos, diseño del estudio, análisis de datos, efectividad y eficiencia de la intervención y discusión. El artículo ofrece un margo general y flexible para cada una de estas áreas intentando ser consistente con las posibilidades y limitaciones propias de la práctica clínica.

PALABRAS CLAVE. Guía. Experimento de caso único. Estudios de casos. Series de casos. Formulación clínica de casos. Estudio teórico.

Clinical case reports (CCRs) –also known as case studies and clinical cases– are descriptions of the assessment and/or treatment of a client or group of clients. CCRs enable particular cases to be described in great detail, so that they may be more instructive to clinicians than studies on the averaged performance of groups. CCR interest is frequently related to reporting new findings that lack replication with group-based methodology. They frequently address new methods, new applications of old methods, low frequency behaviors or unexpected findings. In addition, CCRs may provide preliminary information on the effects of a known assessment or treatment strategy on a new population or the effects of a new form of treatment or implementation of a new assessment procedure. Finally CCR may also inform about outstanding or unpredicted effect of a known form of assessment or treatment.

Current status of CCR in psychological literature

In spite of the relevant contributions of the CCRs a number of clinicians may regard their own clinical practice as lacking scientific interest. Clinicians may consider their practice incompatible with scientific standards (Borckardt and Nash, 2002). Indeed, the Journal of Consulting and Clinical Psychology and Journal of Abnormal Psychology, two of the most prestigious clinical psychology journals which accept "methodologically-sound" case reports, have not published any for years. However, under certain methodological constraints, CCRs enable preliminary tests to be conducted on the utility and effectiveness of novel treatments and clinical methods. In such circumstances, the CCR is a cost-effective option prior to implementing more complex research methods. For instance, Jones, Ghannam, Nigg, and Dyer (1993) have shown that for clinical cases the long-term time-series design is a methodologically sound choice for studying causal therapist-client interactive processes in psychotherapy and psychopathology. Additionally, the application of clinical case formulation strategies to CCRs has revealed high convergent

validity for the identification of behavioral and cognitive clinical scenarios among therapists (Mumma and Smith, 2001). In summary, CCR provide a methodological tool for testing aspects of the therapeutic process that can hardly be addressed through group based methods.

CCRs have been frequently used in clinical research (see Special Issue in Single-case methodology in the Journal of Consulting and Clinical Psychology, 1993, Vol. 61), and have regularly been published in behavior analysis, cognitive therapy, cognitive-behavioral therapy and other fields of psychology for over 50 years. A single search of documents with "clinical case study" methodology in PsycINFO (1997-2007) yielded 16,909 peer-reviewed entries (Search strategy: "Clinical case study" in Methodology and "1997-2007" in Publication Year). In addition, there are a number of journals, including Behavior Therapy, Journal of Applied Behavior Analysis, Clinical Case Studies, among others, committed to the publication of CCRs.

The goal of this theoretical study is to present guidelines that may be useful for clinicians in conducting and presenting CCRs as journal articles. It is hoped that the guidance herein suggested may upgrade the validity of case studies. The present manuscript is an update of Buela-Casal and Sierra's (2002) previous effort to clarify the task of publishing CCRs at the International Journal of Clinical and Health Psychology.

The variety of orientations and sub-fields in clinical psychology precludes the wide usage of restrictive guidelines for CCRs. Let us consider how different a case study on clinical neuropsychology, cognitive therapy and applied behavior analysis could be. The guidelines suggested here are primarily adapted to behavioral and cognitive-behavioral assessment and treatment.

Writing CCRs: Sections

Title

Title should not be longer than 15-20 words. It should clearly portray the behavior problem and type of intervention. The main result could also be mentioned if particularly relevant or new.

Abstract and key words

The Abstract is a key section of any CCR. It should allow the reader become familiar with the main features of the case. The Abstract should describe the number, age and gender of patients, goal of the intervention, type of treatment, assessment and instruments used, design, data-analysis (if any), outcomes, and duration of follow-up. Indeed, despite its location at the commencement of the paper, common sense dictates that it should be written only after the manuscript has been drafted. The Abstract should be no more than 200-250 words in length. In order to facilitate database searching the term "single-case experiment" should be among the keywords (Montero and León, 2007).

Introduction

In this section, the authors should outline the general goal(s) of the CCR with a detailed explanation of the rationale for such goal(s). All CCRs should be provided in

the context of relevant empirical literature. It is even an ethical standard that clinicians be familiar with the literature associated with the behavior problem and treatment they are using (American Psychological Association, 2002). Authors must explicitly describe the gap in knowledge that the paper seeks to address and explain the particular interest that resides in the CCR. The Introduction section might be more expansive in cases where the preliminary effects of a novel procedure are reported.

Patient identification and reason for referral

CCRs can involve a single case or multiple cases. In case series, participants may share a major factor (*e.g.*, type of intervention, behavior problem). In such studies each subject should be described separately while the abstract and introduction may be shared. In addition, information about the patients' identification could be presented in tabular form. Authors must include age, gender, and other personal features relevant to the internal and external validity of the assessment and treatment modality. Forms of personal information that may be relevant include subject's academic background, profession, culture and family status and past and current diagnoses.

Information on past and current treatment efforts should also be provided. Where there is concurrent psychological treatment, the author should give details on the type, duration, session-frequency, results and/or focus of such intervention (*e.g.*, systemic therapy; bi-weekly; preceding five months; inter-generational boundaries). If there is a concurrent pharmacological intervention, the author should report the active principle and dosage of any medication being used in addition to the prorenata medication, if applicable (*e.g.*, haloperidol, 15 mg once per day). It is difficult to obtain reliable information on the past pharmacological treatments of many patients; hence, authors should only report on the current medication.

For institutionalized patients, the unit to which the patient is assigned should be roughly described (*e.g.*, day hospital, open rehabilitation unit, psychiatric hospital with dynamic group sessions and occupational therapy).

Furthermore, the reason for referral and its source (*i.e.*, patient, family, mental health unit, other clinician) must be briefly clarified. In cases where there are discordances between client and clinician criteria as to the focus of assessment and treatment, the authors are to say so, supplying details of any eventual agreement reached as regards treatment. All aspects concerning confidentiality and patients' informed consent should be outlined in this section.

Assessment strategies

Multimethod and multisource assessment are highly recommended as the basis for addressing the component variables of clinical case formulation (*e.g.*, interview with multiple informants, assessment in different occasions, naturalistic observation, self-recording, self-reports) (see definitions at Haynes, 2005). When behavior parameters are measured (*e.g.*, frequency, duration, latency) there should be a supporting framework for the parameters selection and inter-rater reliability estimates should be warranted (see Cooper, Heron, and Heward, 2006). In the latter cases some broad measure of functioning is advised (*e.g.*, CI, social functioning, quality of life, family burden) for the purposes

of informing the wider impact of the intervention. Also, the implementation of frequent assessment or time-series assessment is highly encouraged. When possible, in addition to clinically relevant domains, the assessment of potential side effects should be warranted.

Behavioral CCRs have used standardized scales as measures of pre-post effectiveness and as an indirect index of results generalization (*e.g.*, Sloan and Mizes, 1996; Virués-Ortega, 2004). In addition, they can be used as a method of independent verification (Sidman, 1960), by comparing the impact of an intervention in a case report with that in a clinical trial or other group design, which implemented the same standardized measures (*e.g.*, Moras, Telfer, and Barlow, 1993). When self-report questionnaires are used, authors should: a) highlight validation studies on the population targeted by the instrument; b) provide an explanation on the relationship of the construct assessed by the test with assessment and intervention foci and add references on the predictive validity of the instrument; and, d) in cases where the instruments are used at different time points during the treatment process, specify if parallel forms were used or if a possible practice effect could be overlooked according to the available literature. Further details on assessment methods in Haynes and Heiby (2004), and Moreno and Martínez (2005).

Clinical case formulation

A summarization of the information relevant to describe and explain a given patient's behavior problem is called a clinical case formulation. Clinical case formulations allow for a molecular approach to patients' behavior problems, which can include behavior-problem components, historical factors, biological processes and environmental factors associated with the behavior problem, when the particular features of the case so require. A clinical case formulation is the main outcome of the assessment process and should constitute a concise description specifying the dysfunctional behavior or classes of behavior to be targeted by the intervention. Clinical case formulations can be developed from a functional or a non-functional (*i.e.*, topographically-driven) perspective (see a commentary on the topography/function dichotomy in Hayes, Strosahl, Luoma, Varra, and Wilson, 2005). There are several models of clinical case formulations; authors are referred to specific outlines by Haynes and O'Brien (2000) and Nezu, Nezu, Peacock, and Girdwood (2004).

CCRs should furnish details on the description of the behavior problem itself. Aside from providing some detail on when, how and under what circumstances the behavioral problems were acquired in case the information is available. However, as far as treatment design current maintaining variables are of greater interest, which could be different from the determinants at first acquisition (Virués-Ortega and Haynes, 2005).

Treatments

In this section, CCR authors are to furnish details on the type of treatment judged to be most appropriate for the case being described and the rationale for the choice of treatment. Treatment-related circumstances including therapist-related factors should be also specified here.

Choice of treatment

An important issue is to tie in treatment to the prior assessment. The literature highlights a number of methods for treatment selection, including:

- Selection of the most effective treatment for a particular disorder. This procedure enables the most effective, manualized, topographically-driven treatment to be chosen for a given disorder in line with available literature on empirically-supported treatments (Chambless and Hollon, 1998; Edwards, Dattilio, and Bromley, 2004). Treatment integrity or fidelity refers to degree to which a treatment has been implemented as intended. Providing information on treatment integrity is particularly advised when this pathway for treatment selection is chosen (see Perepletchikova and Kazdin, 2005).
- Functional analysis of behavior: functional analysis allows for the identification of current causal variables affecting a client's behavior problem. In doing so, functional analysis methodology makes it possible to design programs to address and modify those causes. Functional analysis is actually a form of clinical case formulation providing indications for treatment selection and design. There are a number of functional analysis models in the literature (see reviews by Iwata, Kahn, Wallace, and Lindberg, 2000, Sturmey, 2007; and Virués-Ortega and Haynes, 2005).
- Trans-theoretical models of treatment selection: a few authors have suggested logical models for treatment selection, largely on the basis of an underlying psychotherapeutics integration model, or according to patients' individual features (*e.g.*, Lazarus, 1989; Prochaska and Norcross, 1994).
- Other procedures: as mentioned above, novel methods, treatments or populations (*e.g.*, Moras *et al.*, 1993). Thus, restricting the pathways for treatment selection could result in the heuristic value of clinical case methodology being undermined. If the author reporting the clinical case does not use any of the above-mentioned treatment selection procedures, the reasons for doing so ought to be specified. More importantly, authors should provide a strong rationale, citing relevant research on why they have chosen a particular treatment.

Treatment implementation

Authors could also describe the number, periodicity, duration and content of the clinical sessions (*e.g.*, Labrador, Fernández-Velasco, and Rincón, 2006). To ensure that therapeutic techniques or certain particulars of the clinical sessions are clearly explained, short transcripts of clinical dialogues or session-by-session descriptions could be added in this section (*e.g.*, Espada, van der Hofstadt, and Galván, 2007). Details on the techniques used and the sequence of their implementation should also be included in this section (Buela-Casal and Sierra, 2001; Labrador, Echeburúa, and Becoña, 2000; Olivares and Méndez, 2001). Furthermore, readers would find it useful if a chronogram could be included, displaying the clinical goals addressed, techniques used and session content (Echeburúa and Corral, 2001). The information in this section may suffice for readers to check treatment fidelity if any treatment procedure was implemented as suggested by original authors.

Therapist-related factors

A subject frequently neglected in CCRs is the therapeutic relationship. However, there is abundant literature to suggest that therapist-related factors have an enormous impact –at times even greater than the therapist's theoretical or academic background- on the outcome of the intervention (Kohlenberg *et al*., 2005; Norcross, 2002). Authors shall mention the procedures used to enhance treatment adherence and therapeutic alliance (*e.g*., self-disclosure, feedback *etc*., see a review in Norcross, 2002). Moreover, report quality benefits from the participation of multiple therapists (in case series) and from information furnished on therapists' background and training (*e.g*., specialized board certification holder), so that the reader could form a rough idea of the likely impact of therapist-related factors. In summary, it is advised that therapist prompt adherence and therapeutic alliance through explicit procedures. Measures of adherence could involve count of missing appointments, relative count of homework compliance and the like (see a review by Maciá and Méndez, 1996).

Additionally, clinical decision-making bias is particularly relevant to CCRs. For instance, therapists might perceive improvements when there had been none, attach excessive importance to information obtained at the beginning of the assessment process, or indiscriminately deem items of information reliable or unreliable (see a monographs on clinical decision-making by Godoy, 1996). In clinical case studies there is no opportunity for such errors to by randomly distributed, as is the case for group studies with several therapists. The impact of clinical decision-making bias could be minimized by using objective dependent measures, empirically supported assessment instruments and clinical case formulation strategies designed to address biases in clinical judgment (e.g., Haynes and Williams, 2003).

Study design

The simplest choice are AB designs, which may often be the only option for clinicians who do therapy with adults in public and private settings, as designs implementing a second A phase may give rise to ethical and cost-efficiency concerns. AB designs do not imply a return to baseline in order to ensure causal dependency between the intervention and the outcome variable. However, whenever possible, CCR designs should allow for comparison of data on dependent variables from different consecutive conditions or treatment levels. In doing so, clinicians would be able to observe the covariation between conditions and behavioral dependent variables. Subject-, context- and therapist-related confounding variables need to be controlled for in order to support the causal nature (*i.e.*, internal validity) of the potential relationships.

Additionally, a dependent-variable data series should be available for each condition to ensure adequate reliability and representativeness of the conclusions. Comparisons will be clearer where data series are stable and evince low variability.

Comparisons can be made according to a range of criteria, *i.e*., number and type of treatment conditions, reversal to previous conditions, number of treatments, and number of dependent variables. Accordingly, these criteria in turn generate a number of single-case designs, including AB, ABAB, ABCB, BCB, and multiple baseline designs, among others. The reader is referred to Franklin, Allison and Gorman (1996), Hineline

and Lattal (2000), and Kazdin (2003) for a detailed account on single-case experiments designs.

Data analysis

Visual analysis of session-by-session data is the simplest alternative to drawing conclusions from the comparison phases in a CCR (Arnau, 1995; Parsonson and Baer, 1992; Poling, Methot, and LeSage, 1995). Visual analysis may be feasible when changes in level and trend are: a) extensive; b) the series compared display low variability; and, c) the baseline trend is stable or demonstrates a trend that runs counter to the expected direction of the treatment effect. Moreover, the scale range and type of graphs used, whether too small or too wide, should not over-report or minimize any difference in the data (Bailey, 1984).

Non-adherence to the above-mentioned requirements is frequent in CCR literature (Borckardt, Murphy, Nash, and Shaw, 2004; Nugent, 2000). Indeed, Parker *et al*. (2005) reported -over 77 CCRs analyzed- that 66% baselines had positive or negative trends, and 50% of the studies had baselines with high variability. Therefore it is suggested to take advantage of the benefits of statistical analysis to complete impressions obtained through visual analysis with quantitative information. Statistical analysis may be assured when baseline is unstable and there is a need to share the results with other professionals (Kazdin, 2003).

If statistical analyses of single-case data are to be implemented the issue of self-correlation should be properly addressed. Auto-correlation is a trend toward covariation shown by data obtained from the same individual at different time intervals. Auto-correlation may confound the potential treatment effects, and thereby threaten the internal validity of conclusions. A number of strategies have been proposed for avoiding self-correlation, including parametric and non-parametric analyses. Potential contributors are referred to Arnau (1995) for details on the implementation of these analyses.

Effectiveness and efficiency of the intervention

Main results should be described in this section. Whenever possible authors shall report: a) differences in level or trend versus baseline in the dependent variables, whether detected by statistical or visual analysis; and, b) effect size if available, c) a description of the clinical significance of the results. Sometimes, small effects, whether visually or statistically detected, may be relevant or adaptive to the individual or his environment. If properly chosen, dependent measures will automatically furnish information on clinical significance. When this outcome is not warranted ecological measures on the effect of the intervention on individual's daily environment should be added (*e.g.*, third-part informants report, analogue observations, standardized pre- post-measurements). Even when no statistical analysis is conducted, authors are advised to provide mean and standard deviations of pre- and post-test and correlation (if applies) of pre- and post-test outcome variables so the study could be included in effect size meta-analysis (Botella and Gambara, 2006; Morris and DeShon, 2002).

In this section, it is essential to explain how the results are expected to be maintained and become generalized in terms of individuals' daily lives, once the treatment is

discontinued. Authors should mention the mechanism in terms of which such generalization is expected to occur (*e.g.*, Fowler and Baer, 1981).

This section may also describe the specifics of treatment follow-up. Follow-up makes it possible to ascertain whether the treatment and the maintenance and generalization strategies were successful in the long-term. Authors can specify if a follow up phase was conducted and over what period of time.

While follow-up periods should be no shorter than three months, periods of one year or longer are strongly suggested, particularly for studies on behavior problem with a long history or with a known risk of relapse (*e.g.*, drug addictions). It should be noted that the ability to provide longitudinal data is one of CCR's advantages.

Discussion

The final section of the report could include a concise evaluation of the results in the context of the clinical formulation and the intervention designed. In cases where results fail to fulfill expectations, informed preliminary hypotheses could provide the reader with some insight into what actually happened. In addition, outcomes could be discussed in the context of the available literature on the topographies intervened or the treatment mechanisms implemented. The Discussion section may provide detail on aspects that the report helps elucidate and any other aspect that remains unclear as well as any shortcomings of the study.

Summary

The opinion, held by many clinicians, suggesting that CCRs have a limited scientific value, coupled with the lack of clear guidance as to how to draw up and write them, have contributed to the current neglect of single-case methodology in most published CCRs. Nevertheless, there is widespread evidence to show that CCRs make a relevant scientific contribution, with great impact on the development, expansion and assessment of the effectiveness of new forms of intervention.

Table 1 summarizes the contents spelled out in these guidelines and it may be used as a user-friendly outline for authors and referees of International Journal of Clinical and Health Psychology and other journals. By adhering to these points, CCRs could be made clearly useful as well as scientifically valid for assessing the effectiveness of psychological treatments and ascertaining the mechanisms whereby psychological treatments operate.

TABLE 1. Summary of sections and major contents for clinical case reporting.

Section	*Contents*
Title (max. 20 words)	Highly descriptive
Abstract (max. 250 words)	Personal data*
	Goal of the study/intervention*
	Assessment methods*
	Type of treatment
	Design
	Data-analysis
	Major results*
	Follow-up
Key-words	Add 'single-case experiment'*
Introduction	Goals and rationale*
	Relevant empirical background*
Patient identification and reason for referral	Descriptive information: age, gender, education, profession, family status*
	Clinical background: past and current diagnoses and treatments
	Reason for referral*
	Informed consent and confidentiality*
	Past treatments (psychological and pharmacological)
Assessment strategies	Behavior parameters and rationale
	Inter-rater reliability
	Empirical literature and rationale on instruments Use of general functioning measures
	Assessment of side-effects
Clinical case formulation	Problem description*
	Circumstances of problem acquisition
	Maintaining variables
	Summarization of the information relevant to describe and explain a given patient's problem*
	Hypotheses*
Treatments	
Choice of treatment	Method for treatment selection
Treatment implementation	Number, periodicity, duration and content of the clinical sessions
	Chronogram
	Session-by-session description
	Short sessions transcript
	Treatment fidelity measures
Therapist-related factors	Methods enhance treatment adherence
	Single/Multiple therapists
	Information on therapist background
	Measures of adherence
	Methods to minimize clinical decision-making bias
Study design	Time-series measurements
	Design diagram (AB, ABA, ABAB, *etc.*)
	Subject-, context- and therapist-related confounding variables control
Data analysis	Rationale for visual or statistical analysis*
Effectiveness and efficiency of the intervention	Departures from baseline
	Intervention effect size
	Clinical significance of the intervention
	Pre- and post-test data
	Follow-up period
Discussion	Evaluation of the results in the context of the clinical formulation, the intervention designed and the relevant empirical literature*
	Study highlights*
	Study shortcomings*
	Topics for future research*

(*) Required information.

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