



## Explanatory models for work and organizational phenomena: Epistemological, theoretical, and methodological issues

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### Keywords:

theory; phenomenon;  
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### Abstract

This paper aims to discuss explanatory models in Work and Organizational Psychology by analyzing their metatheoretical underpinnings. In particular, the paper analyzes the concepts of causes and reasons, both of which perform a central role in the constitution of scientific models. We demonstrate that experimental, correlational, and case study explanatory models use causes and reasons as strategies of knowledge building, and as a means of linking phenomenon, data, and theory. We also discuss the methodological implications of such use of causes and reasons by scientific models. The paper concludes by discussing theoretical and methodological issues involved in the attempts at building complex models in WOP – showing that, in order to be complex, a model needs to include in its formulation stable-dynamic, cause-reason, and contextual distance-proximity analyses, as well as the theory-phenomenon-data triad.

Modelos explicativos de fenômenos em POT: Aspectos epistemológicos, teóricos e metodológicos

### Palavras-chave:

teoria; fenômenos;  
causas; razões;  
modelos explicativos.

### Resumo

Este artigo tem como objetivo discutir modelos explicativos em Psicologia Organizacional e do Trabalho tendo, como pano de fundo, uma análise das bases metateóricas que os sustentam epistemologicamente. Em particular, analisam-se os conceitos de causas e razões, ambos centrais na composição desses modelos. Demonstramos que os modelos explicativos experimentais, correlacionais e os estudos de caso utilizam-se distintamente de causas e razões em suas estratégias de construção do conhecimento e de articulação entre dados, fenômeno e teoria, e que essa utilização tem implicações no nível metodológico. Finaliza-se problematizando aspectos teórico-metodológicos envolvidos na construção de modelos mais complexos em POT, que levem em conta a análise das dimensões estável-dinâmico, causa-razão e distanciamento-proximidade do contexto, e a tríade teoria-fenômeno-dado.

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### Resumen

Este artículo tiene como objetivo discutir modelos explicativos en Psicología Organizacional al y del Trabajo, teniendo como trasfondo un análisis de las bases metateóricas que los sostienen epistemológicamente. En concreto, se analizan los conceptos de causas y razones, ambos centrales en la formación de dichos modelos. Demostramos que tanto los modelos explicativos experimentales, como los correlacionales y los estudios de caso utilizan, indistintamente, causas y razones en sus estrategias de construcción del conocimiento y de articulación de datos, fenómenos y teoría, y que tal utilización tiene implicaciones en el nivel metodológico. Finalmente, se problematizan aspectos teórico-metodológicos implicados en la construcción de modelos más complejos en POT, que tengan en cuenta el análisis de las dimensiones estable-dinámico, causa-razón, y distanciamiento-proximidad del contexto, así como la tríada teoría-fenómeno-dato.

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Applied research in Work and Organizational Psychology (WOP) requires the researcher to establish relations among variables in order to predict, explain, or understand phenomena related to work, organizations, and management. One of the major challenges in WOP research, shared by other applied social sciences, is to deal with phenomena that are more sensitive to the influence of time and contexts, in other words, that have a dynamism that makes them difficult to apprehend from more parsimonious models of cause and effect relations.

More recently, aiming to incorporate this dynamism, research in WOP has been engaged in discussing the importance to consider time in the configuration of the investigated phenomenon (e.g., Shipp & Cole, 2015; Sonnentag, 2012), which brings significant contributions since it forces new methodological arrangements in order to integrate the search for cause and effect relations to the intentions of organizational actors. As a consequence of the consideration of time in phenomena analysis, longitudinal studies have been prioritized (e.g., Ployhart & Vandenberg, 2010).

Although such advancement of including the dynamism of WOP phenomena at the methodological level is recognized, in this article our focus will lie on the discussion of the theoretical-conceptual foundations that underlie the explanatory models: the search for phenomena causes or reasons, the relations between phenomenon-theory and data, and the choice for compatible methodological designs.

Our starting point is the recognition that phenomena in WOP involve aspects at the individual and group levels, as well as at the broader organizational context. And when it is taken into account that human behavior is the result of mutual influence of individual and contextual characteristics, the explanatory theoretical models in WOP must contemplate this complexity. An explanatory theoretical model can be defined as the set of assumptions, postulates, and principles related to a phenomenon, and that maintains an internal logical consistency. Its goal is to demarcate, describe, explain, or understand the conditions under which that same phenomenon manifests itself, what triggers it, and what are its consequents. Theoretical models are also associated to forms of knowledge representation about a given phenomenon that impact the choice for methodological strategies to apprehend, describe, and explain it.

In this context, this article aims to discuss theoretical, epistemological, and methodological aspects related to explanatory methods in WOP, considering that some of the phenomena studied are significantly sensitive to context, making it difficult to apprehend them. We also retake discussions present in the philosophy of science, beginning with the concepts of cause and reasons and motives, both central in the construction of explanatory models. Then, we analyze some research designs, such as the experimental and correlational ones, and case studies, which are based, on greater or lesser extent, on the notions of cause and reasons (including actors' intentionality). The specificities of these research designs are explored in terms of their contribution to the construction of valid and applicable knowledge in WOP. We conclude the article questioning theoretical-methodological aspects involved in the construction of more complex models in WOP that take into account the analysis of the following dimensions: stable-dynamic, cause-reason, and distance-proximity from context, in addition to the theory-phenomenon-data triad.

### **Causes and reasons**

There is an extensive body of research, especially in philosophy of science (e.g., Benton & Craib, 2001; Bunge, 1959; Lakatos

& Musgrove, 1970; Popper, 1973), dedicated to the discussion on what conditions or fundamentals are necessary to assert a relation in which A causes B in phenomena studied in the context of the so-called human and social sciences. In particular, such discussions aim to determine the ways by which a phenomenon can be predicted. Indeed, the ability to make predictions becomes possible when the invariants and regularities that link independent events are revealed. Such ability is materialized in explanatory models. Two types of explanatory models in WOP are specifically highlighted. The first one is the causal model; the second, the reason one. Both manifest themselves as mental devices that help to identify distinct relations between the events to be explained.

Cause is a type of presumed relation between two or more events or states that are separated in a short, medium, or long period of time. Causes are not attributes of objects, but mental formulations inferred from observation that allow inferences about the existence of relations between two events that occur in time sequence. Statements such as: poor performance (cause event) led to the dismissal decision (effect event); leader attributes cause welfare in team members; intrinsic characteristics of the job increase motivation more than financial rewards; all them refer to events that occur in time sequence and that, due to previously established criteria, are supposed to maintain a relation of implication that favors predicting the effects in the future. Synthesizing, cause involves the recognition of change in time in a specific direction (Sloman, 2005). "Cause event" always precedes effect. If this precedence relation of cause cannot be assured, then, one can only say that there are relations, or rather correlations.

Affirming that there are causal relations between events in WOP, however, is not easy. It requires the adoption of methodological procedures that assure apprehending the mechanisms by which a cause leads to an effect, which includes the formulation of counter-facts and the adoption of a specific research design: the experiment. A counter-fact is the proposition of a relation between two events that is distinct from that established in the hypothesized causal relation, which may put into question the presumed relation. This questioning is because the counter-fact suggests that the expected effect for a causal event does not appear. A worker with bad-performance that has not been fired breaks a presumed causal chain in which a bad-performance has the effect of worker's dismissal. The reasons for not firing (effect) may have had other causes unrelated to performance. Political issues, for example.

Experiment is a type of research design and method that comprises the manipulation of the variable believed to be the cause. To infer the relation of direct influence, the researcher creates conditions that impose values to the variable "cause" in order to evaluate what changes in the variable expected to suffer its effect. This will be further explored in the third section of this article.

The search for causal relations is something perfectly aligned with the objectives of natural sciences. In the context of social sciences, however, it is necessary to also include explanations of the relations between man and his actions in the world, involving other people. The understanding of people's behavior in their relation with the world has two dimensions: cognitive and social action. The cognitive dimension refers how people mentally organize information, establishing sequences and relations between concrete and abstract objects. The social action dimension recognizes that a person's oral or actual behavior may change the relation between people, influencing social interaction and the behavior of others (Buss, 1978; Malle, 2006). The actor and his intent (reasons and motives) begin to occupy a central role in the construction of the explanation of events in the world.

The starting point lies in the belief that other people reason and feel the same way: all human beings can perceive, think about general principles, as well as put themselves in other peoples' places and infer about their beliefs, desires, and emotions. General principles guide these psychological mechanisms. Heider (1958) discusses the differentiation among "impersonal causality", explanation on unintended behaviors, and "personal causality", which takes into account intended behavior, that is, actors' motives or reasons.

Reason, therefore, follows a different logic of search for relation in science. Subjectivity and rationality are its main components. There are three understanding levels of reason: the first one considers that every human behavior is presumably intentional or motivated. This makes the focus lies on this actor's intent when interpreting his own behavior or that of others (individual subjectivity).

Reason can also be found beyond the actor's intention. In this case, reason would be in the understanding of the history. The broader historical and cultural context in which the agent is immersed offers rationality to his actions, giving a more abstract and objective character to behavior, easily apprehended by an external observer. This means that to make sense of the actor's action, it is not necessary to ask him; it is enough to know the historical and cultural context in which he is inserted. The history of the organization, in addition to the history of their founders and leaders, could help understanding the events that internally happen to each of them.

Certainly, the regularities that have been observed over time in an organization, for example, do not allow predicting future effects, as natural sciences seek. But its history helps, retrospectively, in the understanding of the reasons that preceded its effects, which increases the ability of learning from experience and avoids and anticipates that same effect, at least considering the same background. In short, it acts more in retrospective terms and action trends observed in the past than in the prediction of future direct influence, as in causal models.

The third level of reason understanding, in addition to actor's intent and historical trends, lies in the actor's facilitating conditions of behavior or action. The more difficult and unlikely a behavior, the more the reason for its occurrence is sought under the conditions that made it possible. The reason for the bad behavior that resulted in the worker's dismissal can be found in the absence of guidance from management, in the lack of material to perform the work satisfactorily or in the short time given to do a complex task. It is important to clarify that although we have considered three level of reasons, they appear as complementary in the understanding of the phenomenon.

#### **Phenomenon, theory, causes, and reasons**

The understanding of scope differences in the relations that are possible to establish regarding causes and reasons becomes relevant to the discussions of this article, considering that WOP is inserted in the context of applied social sciences. Mainly with respect to organizational psychology, more than to work psychology, its central focus is to understand human behavior of individuals and groups in the context of work organizations. Although there are different types of formal organizations, there are various theories that aim to explain how they work generically, in terms of structure and dynamism.

The more abstract relations between events that take place in organizational contexts, however, cannot ignore organizations that act as micro societies that undergo changes over time through direct or indirect actions of actors that are part of it, impacting the phenomena that happen there. In addition to this, organizations

are ultimately a result of the intentional conducts of the actors that build it since they are not formed spontaneously.

A science that intends to provide more complex explanatory models of human behavior in organizations is faced with the challenge of building models that include causal invariant relations, offer stability and predictability to such models, and, at the same time, that allow interpreting the actions of the actors that are part of it, in other words, that combine generality with specificity. In this case, relations are explained in the context of intentional, historical, and action-facilitator reasons, in an integrated and complementary way.

By following this line of reasoning, a general explanatory model of causal antecedents of organizational compromising would be laudable, but insufficient to account for so diverse organizational contexts, given that it would be kind of impractical, for example, to micro and small enterprises, public enterprises, and to the agribusiness industry. Contingency factors, more related to the specificities under which the phenomenon manifests itself, or even to the intentions of strategic actors of the organization, would be very helpful in order to understand, for example, how compromising manifests itself in a given context.

The last statement takes us to the challenge of understanding the meaning of phenomenon in work and organizational psychology, articulating it with theory and empiric data. For its history of focusing more on practical and applied issues, WOP is at times accused of perpetuating an arid theoretical field, in other words, of being poor in theory (Zickar & Gibby, 2007). More than something merely related to the "object of study", a phenomenon is an intricate concept to which the meaning and value of theories and empiric data converge (Bailer-Jones, 2009). The concepts of cause and reason discussed throughout this text depend on an intuitive concept of phenomenon to make sense. Moreover, the lack of clarity on phenomenon leads either to a theoretical purism with no application and dialog with practice in psychology, work, and organizations, or, on the contrary, to a technological type of pragmatism, a-theoretical, whose research is based only on the accumulation of discrete empirical data – especially when conducted by correlate studies.

Throughout the history of science, different ways of thinking the relation between theory and phenomenon have been proposed, and it would escape the scope of this article try to synthesize them. However, one aspect of this issue is usually emphasized, related to the distinction between observable and unobservable entities. From this distinction, some possibilities of thinking about the relation between theory and empiric data arise, by means of the phenomenon.

The first of these possibilities is thinking that theoretical terms can refer, in principle, to unobserved entities. The hypothesis consists of a prediction logically deduced from a pre-existing system of concepts. Such hypotheses emerge, therefore, from the theoretical tangle prior to the researcher and to which he is affiliated. Hypothesis does not necessarily refer to something directly observed. However, its predictive power is determined only when the researcher submits it to an empiric test, "injecting", so to speak, content to form. The hypothesis would, then, be a statement that assumes the existence of relations between variables, derived from the theory and related to the phenomenon (closer to the empirical reality) under study. This is the syntactic view of the theory and, for sure, is very influential in WOP research models. From this view derives the frequent distinction in WOP between empirical concepts (feasible) and theoretical concepts (conceptual constructions).

The second possibility is known as semantic approach, based on the premise that theory should reflect (or modulate) phenomena that exist in reality. Theory, in this case, *names* the phenomenon, which is accessed through the construction of conceptual models – and, at the technical level, evaluated by increasingly sophisticated mathematical-statistical models.

In WOP, models have an important role. An analysis of the scientific production on any construct in this area reveals a profusion of explanatory models that often refer to the same aspects of organizational or work reality, forcing researchers to undertake a continuous effort of semantic debugging. One example of this are the theoretical models based on constructs such as commitment, engagement, entrenchment; another example are those based on constructs such as sense and meaning of work; or those of health, welfare, and satisfaction at work. In each case, the reality apprehended and represented is influenced by the semantic construction of the respective models. This shift can lead to a linguistic “cacophony”, a situation marked by fragmentation and the dispute, often merely political, for research territories.

The central aspect to support in this context is that phenomena are the link of interaction between theory and empirical data. Hypotheses test the explanatory power of aspects of the theory in explaining or understanding the phenomenon facets, the construction that links the theory to the empirical world (Massimi, 2007; Schindler, 2007). It is on the understanding of the phenomenon, at the ontological/epistemological levels, that depends its degree of structure, in other words, the fact of making sense or not to apprehend it from the presupposition of causes or reasons. Waiving this reflection leads inevitably to an empirical fragmentation, or to a sterile theorizing, as in the case of studies that describe the phenomenon without actually inquiring about its motivations (reasons) or “the whys”(causes) it happens in a given way.

More importantly, as highlighted by Valsiner (2000), data are signs that represent theoretical and subjectively selected facets of a phenomenon. For that author, for empirical data to make sense, it depends on the link made by the researcher between the empirical manifestation of the phenomenon and a particular field of meanings. It is exactly this “flexibility” of the data in relation to the theory that allows them to be explained in different ways, even though referring to the same phenomenon - in philosophy of science, it is known as the problem of the under-determination of theory by evidence (Quine, 1975). This is because, in the process of empirical reconstruction, different methods generate different data - which, in turn, can produce different patterns to be interpreted (Apel, 2011).

As a result, and this aspect is crucial to the discussion of research designs, there is no single or best way of acquiring knowledge on phenomena. Depending on the way how these phenomena are conceived, a method that seeks patterns can make sense - and, as a result, the use of mathematical reduction procedures or statistics would be defensible. However, for less structured phenomena or those that have developmental characteristics (change over time) - as several phenomena in WOP are, indeed more sensitive to temporality - to rely on more structured research methods and designs may not be the best way of, citing here an expression used by Van Fraassen (1979), “saving the phenomena”.

The search for *causes* seems to better apply to phenomena as well-structured entities, more susceptible to the logic of non-randomness. In other cases, less structured approaches can make more sense, whether in a correlational way (when still at an exploratory level of the manifestation forms of the phenomenon), or even in the different “qualitative” proposals. The next section

is dedicated to two major designs, against the background of this discussion: the correlational and “qualitative” designs, represented in most cases by case studies; and the causal design.

### Revisiting some research designs in WOP

Methodology textbooks usually classify research in exploratory, descriptive, correlational, and causal (e.g., Coolican, 2007; Morales-Domínguez, Huici-Casal, Gómez-Jiménez, & Gaviria-Stewart, 2008; Kantowitz, Roediger, & Elmes, 2005; Reis & Judd, 2000; Swift & Piff, 2005). More than a diversification of methodological designs, this classification points to a growing complexity, and, above all, an explanatory power as it passes from exploratory to casual studies. In the latter case, the goal of the researcher, and, consequently, all his methodological arrangement, is aimed at the explanation of why a certain phenomenon happens or, more specifically, under what condition (or conditions) what set (or sets) of independent variables explain a part of or the whole behavior of the dependent variable (or variables). In causal studies, *necessary* relations between aspects of a given phenomenon are sought (A causing B), and not only *correlations* (A related B) (Bezzina & Saunders, 2014). In the next section of this article, we will analyze causal studies. In this section, correlational studies, its advantages, and limits will be the subject under analysis.

In WOP, a higher occurrence of non-experimental studies can be observed, whether of the descriptive-qualitative type, with focus on the comprehension of a specific case, or the correlational type, with data collection at a single moment. Although such studies allow contemplating the association between variables (Bezzina & Saunders, 2014) and the search for reasons and motivations, they not always follow the rigorous theoretical-methodological operationalization, especially qualitative designs.

Criticism of correlational studies is old (e.g., Boudon & Fillieule, 2004). The most important fact, which still seems not overcome, is that such studies do not allow accessing the way in which reality is structured to beyond its contingent manifestations. Of course, in this criticism, there is a model of science which conceives phenomenon as a structured “entity”, whose functioning can be apprehended through the discovery of *necessary* and *sufficient* connections in its dynamics of operation. For the purposes of this article, and to maintain its scope, one can say that correlational research, seen only didactically as a single unit, shows itself infertile (or, in the limit, it applies to a narrow range of the work and organizational reality) if the “correlated” data (even in complex statistical models) are disconnected from theory, in the sense that theory is closely connected to the phenomena, and is their only condition or access way. Maybe that is why the theoretical poverty of the area is so criticized, as previously alluded. It derives from a theoretical under development at the level of phenomenon apprehension and not at the level of isolated theoretical elaboration. This last risk seems to be more associated to the option for qualitative methods.

In qualitative designs, therefore, there is another problem with respect to the conception of phenomenon. It arises from the fact that many researchers who adhere to principles of qualitative approach conceive phenomena as constructed, distancing themselves from the realistic epistemological conceptions that phenomena are discovered. That is, they deny that phenomena are entities, processes, structures, etc., present in the world and waiting for a concept that captures them.

In broad terms, qualitative researchers tend to assume the inverse idea: that the phenomena investigated by them are constructed, inter-subjectively, during and through the investigation

activity itself. Moreover, thanks to the influence of epistemologies sustained on constructionism, the idea that phenomena are linguistic postulations created according to pragmatic interests and linked to certain fields of meaning was spread, according to which, phenomena are *re-presented*.

Constructionism shows itself critical to the supposition that phenomena are a-historical essences, entities independent of interpretation. Moreover, and thanks to hermeneutical influences, it is considered that interpretation is never final in capturing true and ultimate meaning related to a phenomenon. The criticism is, thus, the “naive realism” in relation to meaning, a posture that approaches qualitative methods of anti-realistic perspectives in philosophy of science.

Certainly, the critical observations mentioned in this section aim only to contribute to the epistemological and methodological debate in the field of knowledge production in WOP. Correlational and qualitative studies are likely to provide a significant contribution to this applied field since they focus on seeking other types of relations in the manifestation of the phenomenon beyond causal relations, already broadly discussed in experimental studies.

The theory-phenomenon-data triad is present in all methodological designs. While in correlational research it is the “break” with theory/phenomena that is at stake, in qualitative research it is the break between theory and data/phenomenon. In WOP, that can bring very harmful consequences, in view of the greater difficulty of these perspectives in dialoguing with demands from organizational contexts (Bendassolli, Borges-Andrade, & Malvezzi, 2010). By emphasizing only the perspective of *reasons*, they lose sight of the fundamental and inseparable relation among theory-phenomenon-data, an even more fundamental articulation when it comes to phenomena in WOP. Next, we discuss how experimental research deals with that same issue.

### Phenomena, causes, and experimental research

Experimentation is a research method in which the researcher actively creates a situation intended primarily to submit to test one or more hypotheses previously found in literature, although in some cases the experiment can be used to register a still not scientifically documented phenomenon (Smith, 2000; West, Biesanz, & Pitts, 2000). In these terms, the experimentation universe is much less associated to the context of discovery than to the context of justification, and may be understood as a scientific procedure par excellence intended to elaborate inferences that make it plausible and sustainable the statement of scientifically justified arguments with respect to the existence of non-contingent relations between an antecedent, named independent variable (IV), and a consequent, usually referred to as dependent variable (DV).

Particularly, in the area of psychology, the planning and implementation of a situation created by the researcher for submitting a hypothesis to test rarely corresponds to the situations in which the psychological phenomenon manifests itself. The fact has led many critics to suggest that experimentation is an artificial method that offers little significant results and that represent nothing but artifacts created by the researcher (Brewer, 2000; Rosenthal, Rosnow, & Kazdin, 2009; Strohmets, 2008).

This type of criticism assumes the acceptance of an unsustainable principle, that experimental studies should be an isomorphic representation, an exact correspondence to the reality under investigation. Still in 1968, Aronson and Carlsmith established a distinction between mundane realism, in which it is supposed that an experiment should be an exact representation of the situation that

the research participant supposedly finds in everyday life, and experimental realism, a situation carefully planned by the researcher in order to elicit in the participant the type of mental or behavioral event to be measured aiming to test one or more hypotheses identified in specialized literature.

The recognition of the need to differentiate two realism modes imposes to the researcher the acceptance of a real stratified ontological perspective, in which the existence of a mundane and empirically oriented reality is assumed and, on the other hand, another dimension, in which mechanisms not apprehensible by experience are present and manifest, and would ultimately be responsible for the expression of the phenomena that manifest themselves in daily life. These two dimensions of reality can be called empirical and real (Bhaskar, 1997/1975).

The experiment, for not belonging to the real domain, since it is inaccessible, and even less to the plan of ordinary experience, since the thesis of mundane realism is rejected, would be placed in an intermediary position between these two dimensions of reality. It is a resource whereby, from a social, mundane, and ordinary situation, one can have access, in an indirect way, to the mechanisms that substantiate phenomena that happen in reality. Additionally, it also allows an identification of how these mechanisms determine ordinary individual experience, whether in personal, social, or organizational contexts.

The advantage of experiment compared to observational methods, aimed much more at the preservation of the manifestation conditions of the phenomenon in ordinary reality (ecological validity), and to methods that employ self-report measures, which favors the generalization of findings for contexts diverse from those in which data were obtained, lies in the ease with which the experiment allows the formulation of causal inferences not justified in the light of scientific knowledge in the field of research to which it is ascribed.

The formulation of a supposition in which the relation between an antecedent and a consequent is assumed depends on the occurrence of three conditions: (a) the co-variation of the relations between IV and DV, (b) time order and (c) the elimination of competitor explanations. Experiment is the method that is better able to formulate causal inferences while meeting, in some circumstances, the three conditions introduced above (Hayes, 2013).

Since this is an artificially created situation (that does not occur naturally - which is provoked) for the purpose of testing the effect of an antecedent on a consequent, the researcher can randomly allocate participants to the experimental condition and control group, and measure the effect of the manipulation of IV on DV. In case it is identified that the phenomenon manifests itself only or at a greater degree among the participants of the experimental group, the researcher can infer a causal relation between IV and DV. In addition, and most importantly, he can modify the intensity of experimental manipulation and identify if the effects on the dependent variable suffered systematic co-variations as modifications in the quality or intensity of the independent variables are introduced.

A second determinant for the formulation of causal inferences manifests itself at the temporal level and refers to the possibility of affirming a temporally consistent relation between antecedent and consequent. This becomes particularly interesting in contemporary studies in social and organizational psychology in which one seeks to identify conditional relations between IVs, DVs and one or more mediators (intervening variables that, in their presence, increase the effect of an antecedent variable on a dependent one) (Baron & Kenny, 1986). It is possible, for example, to identify a temporal sequence by conducting a study that shows the relation between IV

and the mediator; another one, between the mediator and DV, and a third study, on IV and DV.

The artificiality that characterizes laboratory experiments is a result of the need to study the phenomenon in a controlled manner. Controlling alternative explanations does not mean eliminating any source of error, since random errors will be present in any scientific study of empirical base. The experimental method, combined with statistical procedures, allows differentiating the impact of non-systematic error sources, which, as such, cannot be anticipated or predicted, from systematic errors. The systematic control of alternative sources of explanation is a key element in an experiment and can be achieved through the formulation and implementation of research designs compatible with the problem submitted to scientific scrutiny.

### Problematizing the construction of explanatory models in WOP

The construction base of explanatory models in social sciences and humanities is settled on an optimal solution of the theory-phenomenon-data triad (e.g., Apel, 2011; Bailer-Jones, 2009; Bendassolli, 2014; Bogen & Woodward, 1988; Schindler, 2011; Valsiner, 2000). Explanatory models are representations and interpretative and simplified descriptions of the relations that show themselves in the manifestation of a phenomenon. All possible relations, thus, are not exhausted, but only some of their facets. As previously seen in other sections of this article, phenomenon would then be the link that connects the abstract theory and to the concrete data, or, on the contrary, the concrete data to a general theory. The investigation method provides a differentiated status to each of the elements of the triad: theory-phenomenon-data.

The phenomenon would be closer to the abstract theory because it is delimited by operational concepts derived from it. It would also be close to observed data, because it has concreteness, which allows not only to put at test hypotheses derived from the theory but also the subsequent theoretical construction which aims to provide meaning to data, explaining them. Data, for scientific purposes, would be the empirical expression of the phenomenon (Gondim & Bendassolli, 2014).

The metaphor of a bridge to represent the theory-phenomenon-data triad would be helpful to better understand the desired relations and the role of method in explanatory models. Concepts or psychological constructs are not given in the real world. They are abstract constructions that allow the establishment of a bridge between the real world and the immaterial mind. The bridge, however, can only make this relation through the demarcation of a phenomenon that the theory aims to describe and explain. Such phenomenon materializes in an observable datum, in other words, accessible to sense organs. One of the characteristics of the bridge is that it does not have a single beginning and end. It links two points in space, and ensures the bidirectional movement. That being so, theoretical constructions provide the proper framing to observe empirical data in light of a phenomenon. The empirical data, in turn, imposes conditions to the phenomenal perception, leading to a theoretical rearrangement so it can be better defined.

Complexity increases when it is recognized that phenomena are not static. Every phenomenon, at some level, suffers the effect of the action of time. Time, in turn, can be understood as a sequence of events that change over an arbitrated period, due to intrinsic (e.g., maturation) or extrinsic factors (e.g., physical, social, cultural contexts, etc.). It is a measurable (chronology) and qualifying (substantive changes) magnitude. Phenomena conceived as more unstable are more susceptible to the action of time and, therefore,

more difficult to be apprehended. Taking up the metaphor of bridge-phenomenon, it is assumed that the bridge moves and suffer effects of the action of physical and chronological time, with clear impacts on its quality; and there is an effort to prevent actions of time, which puts at risk the capacity of the bridge to continue doing its job of keeping standing (without collapsing), linking two points (theory and data). To save the bridge, (phenomenon) in some cases, the reconfiguration of the phenomenon becomes urgent to a better adjustment between theory and data. An example of this could be the study of psychological contracts. When the worker becomes part of the organization, he creates an expectation of exchange based on the logic of reciprocity: what am I supposed to do for the company and what should it do for me in exchange. This psychological contract goes through changes over time due to compliance or not with these exchanges. Theories on psychological contracts had, therefore, to redefine their principles in light of this dynamic nature, with effect on methodological designs and on the inclusion of concepts such as violation and breach of contract.

Another alternative may be to build bridges nearby that provide a link between the two points from new theoretical arrangements and types of data. The risk in the construction of many "neighbor" bridges is to "deform" the phenomenon by imposing new concepts to the same facets already conceptually aligned. Conceptual pulverization, imprecision, and stretching can be explained through this mechanism of saving the bridge by building other bridges between theory and data to talk about the same phenomenon, presenting it as something new. As already discussed in previous sections, literature on sense and meaning of work, for example, deals with the two constructs as different, but in most cases research designs consider them undifferentiated by adopting research methods that ignore the interdependence of concepts.

It is also necessary to take into account that phenomena in Work and Organizational Psychology suffer two constrictions. The first one has a theoretical nature, since theories describe and define only phenomena that manifest themselves in work and organizational contexts. The second constriction is a result of changes in time, such as structure and organizational dynamics, working environment, and group and individual variables. Apprehending phenomena that undergo changes in time in WOP requires opening the possibility of reconfiguration of the phenomenon and creating alternative bridges that may link other constructs to the same or new data sets, avoiding the polysemy that contributes to theoretical imprecision and vagueness in phenomenon demarcation.

Such alternatives mobilize two domains: methodological and theoretical. The choice of method depends on how the phenomenon is being treated by the theory that tries to explain it. The method provides the foundation of the bridge that links theory to data. By taking into account the aspects discussed in this article, there are three continuous that would serve as foundation to the theory-data link through a form of apprehension of the phenomenon: stability versus dynamicity, cause (invariance - relational determination) versus reason (variance - historical and subjective intentionality), distancing from the context (little environmental susceptibility) versus closeness from the context (susceptibility of environmental influence).

Figure 1 illustrates the three solid lines and possible methodological alternatives for phenomena apprehension in WOP. The three main research methods mentioned in this article are arranged at specific points of each of the solid lines.

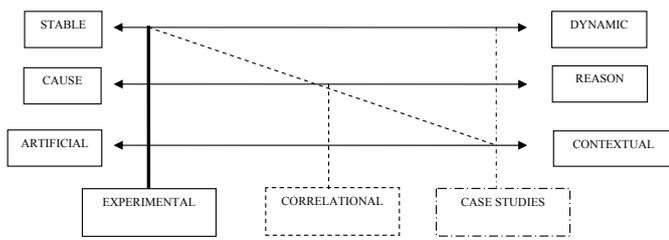


Figure 1. Methods arrangement in the three solid lines. Source: Elaborated by the authors.

The choice for the experimental method is more appropriate when the researcher decides to apprehend more stable facets of the phenomenon, distancing it from its emergence context and artificially recreating it under controlled situations. In the case of WOP, it could be considered an example studying the impact of task conflict in decision-making by creating a specific situation that generates task conflicts and observing, under controlled situations, the decision-making process of a team created especially for this purpose.

The goal is to identify invariance in causal relations between representative events of the phenomenon in time. The experimental design adds a greater relevance to the triad initial relation: THEORY-PHENOMENON-data. The phenomenon construction is strongly guided by a theoretical model that puts at empirical test an experiment of hypothesized relations. It is expected that data conform to the hypotheses derived from the theory.

Correlational methods, in turn, are tangent to the three solid lines. The researcher decides to apprehend more stable facets of the phenomenon to be studied, but in a different way from experimental design. More than the recreation of the phenomenon, distancing it from the context, the choice for this method implies stopping the phenomenon in time and apprehending it just like a photograph. The context is recognized as an important factor, although it is indeed the background of the performed analyses. The method reifies the difficulty of establishing invariant relations, since, in organizational phenomena, the variables simultaneously involved are innumerable. But the concern to include them as much as possible in an instantaneous phenomenal apprehension increases the complexity of relations, making them little interpretable in a more consistent theory. Explanatory models end up being small in scope. Correlational design, in turn, puts more emphasis on the final part of the triad: theory-PHENOMENON-DATA.

The option for a qualitative study of cases lies on the apprehension of the phenomenon as dynamic, having a strong impact of the action of time. Besides being unstable, the phenomenon is influenced by the intentionality of the actors and also by a provisional historical/cultural objectification (context), which leads the researcher to give priority to techniques that allow apprehending the phenomenon in the context through the actors' discourse and the inclusion of symbolic aspects that mark time passage. Case studies, as other more qualitative approach methods put emphasis on data; or taken, within the meaning of Souza e Gomes (2003). The construction of the phenomenon ends up happening through what is captured (taken) from individual narratives or those inferred by documental analysis and other types of symbolic, observational, and imaging records. The theoretical construction would be based on a configuration of data that allows the emergence of a phenomenon, as it happens in the approaches of the reasoned theory (Glaser & Strauss, 1967). The theory would give an interpretative sense to such emergent phenomenon. The triad, thus, would be represented in the following way: DATA-PHENOMENON-theory.

The construction of more complex explanatory models in WOP largely depends on the decision of scientist and scholars who address a given object which can only be apprehended in the emergence of a created or captured phenomenon that links theory to observational data. The triad reveals the inherent interdependence of applied areas such as WOP to scientific enterprise. If the starting point is theory or data, it does not seem to be the key factor, but the way how the phenomenon allows a continuous alignment between theory and data. And, in this sense, the reflection on the dimensions that allow demarcating the phenomenon helps justifying the design and apprehension method of the phenomenon, in addition to challenging theory to, in fact, interpret or explain how the phenomenon is being represented by the set of data.

If the phenomenon can take many facets requiring a set of observational data and a specific theoretical basis, one can mistakenly believe theoretical polysemy is the solution. Rather than that, it creates more imprecision. The challenge is in creating new bridges or adjusting the existing ones in order to allow the apprehension of various facets of the phenomenon by employing methods that are more adjusted to each of them and providing inputs for the refinement of explanatory theories that integrate such facets (e.g., Van Knippenberg, 2011).

Longitudinal studies have proved themselves promising in the field of WOP to bring relevant contributions that allow repositioning experimental (linear sequence), correlational (temporal cut), and qualitative (with focus on actors' subjectivity and intentionality) methods, but, certainly, other challenges arise: (a) to define theoretically the optimal range to make the measurements in time taking into account the conception that the phenomenon changes over time; (b) to define how to enable the measurement, in other words, what is the best way to measure it; (c) to consider that the ground zero (start time of the first measurement) does not represent the beginning of the phenomenon, but defines the moment at which it began to be captured; (d) how to include and integrate in the analyses measurements that allow evaluating how individuals believe that the change occurred.

The choice for mixed methods from mature reflections on the theory-phenomenon-data triad, and that include the temporal dimension in explanatory methods, opens new horizons for the advancement of knowledge in WOP. But the external pressure and internal competitiveness for rapid scientific production feed the culture of hasty methodological choice, which places data in the foreground and at the short term. It meets the interest of mistaken scientific policies instead of to theoretical rigor and criteria of phenomenon conception that enable to define more properly the methods that will guide data collection. It is considered, however, that the mature adoption of mixed methods is a horizon to be sought. Theoretical-methodological discussions such as those of this article can be added to the increasing efforts towards contributing to improve knowledge production in WOP.

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