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Comparisons in research and reasoning: Toward an integrative theory of social induction

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A B S T R A C T

Strong scientific theories give coherence to a body of research findings, make precise predictions about key phenomena, and guide the search for new discoveries. In social psychology, some contemporary theories fall short of this ideal. Mini-theories are prevalent (cf. Van Lange, Higgins, & Kruglanski, 2011), many predictions are merely directional (*like this one!*) and theorizing *post-hoc*. Guided by experimental reasoning, many researchers emphasize—and *reify*—empirical differences. Taking the experimental method as an epistemological gold standard, they regard comparative thinking as a criterion of rational thinking. Using examples from social judgment and decision making, we show how comparative reasoning can constrain theoretical development and bias assessments of human rationality. To encourage movement toward stronger theory, we describe a model of inductive reasoning in social contexts.

1. Introduction

> *Comparison* is essential in research and should be omnipresent.
>
> ~Ellsworth and Gonzalez (2003, p. 25; *italics* in original)

> Every man bears the whole stamp of the human condition.
>
> ~Montaigne (in "Of Repentance")

The sciences seek to provide insights into nature where simple observation fails. To succeed, any science needs an epistemology and a set of methods and procedures that guide the search for knowledge (Lakatos, 1978). Psychological science is in a unique position because one of its tasks is to study how ordinary people draw inferences from observations. To us, it is not surprising that psychological science has approached the study of everyday inference from the point of view of its own epistemological and methodological commitments. For scientists to expect that people think as they themselves do is an intriguing instance of social projection (Krueger, 1998). A crucial feature of this process is that it tends to become normative. That is, scientists come to demand that ordinary people think like scientists do. Influential psychologists have proposed that people can be regarded as rational inasmuch as they master the logic of deduction (Inhelder & Piaget, 1958; Wason, 1960), or the calculus of probability (Nisbett & Ross, 1980; Tversky & Kahneman, 1974).

The present article is concerned with the interplay between the general scientific enterprise of gathering knowledge and the implications of this enterprise for research on everyday rationality. We focus on the logic of experimentation as a dominant feature of the scientific method in psychology. Coupled with standard methods of null hypothesis significance testing (NHST), the experimental paradigm leads some researchers to construe human rationality as reasoning by comparisons. We

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identify weaknesses in contemporary research practice and explore their implications for the study of rationality. The heart of our argument is that with improvements in theory development and hypothesis testing, the study of human rationality will also benefit.

We focus our inquiry on the social psychology of judgment and decision making. This subdiscipline of psychology relies heavily on experimental design to formulate research questions, and on NHST to evaluate people's answers. Specificity is seen as a virtue and there are few attempts to integrate sets of phenomena into comprehensive theoretical frameworks (Edwards & Berry, 2010; Higgins, 2004; Kenrick, 1994). Concurrent with these epistemic and methodologicial challenges, the assumption that ordinary people should reason by comparison like experimentalists do lies close to the field's axiomatic core (Gigerenzer, 1991). Therefore, any critique of experimental or data analytic methods has implications for conceptions of rationality. We pursue this theme as the central objective in this article, noting that the linkage between a critical assessment of methods of design and analysis on the one hand, and the criteria used to evaluate human rationality on the other, has gone largely unexamined in the scientific literature.

Our first concern is that the search for significant differences opens the door to *post-hoc* theorizing (Kerr, 1998). The discovery of differences constrains the depth of theory if these differences are *reified*, that is, if they are treated as things instead of relationships, and when corresponding latent psychological constructs are postulated to explain these differences. Ellsworth and Gonzalez (2003) are clear about the need to distinguish between the two. While they insist that comparisons are essential to research (see epigraph), they also caution not to "discuss effect sizes in a manner that implies a deep fundamental relation" (p. 38). In a particular instance of research, it may be difficult to decide whether the fallacy of reification has occurred. The most obvious case is one that involves a tautology, that is, when the statistical effect and the process that presumably caused it are called by the same name and are not measured independently. Higgins (2004), for example, suggested just this happened in the case of the most famous phenomenon in the literature on social perception. He writes that:

> "social psychologists represented the special phenomenon as being *about* people underestimating the impact of situational forces and then they inferred a special "fundamental attribution error" or "correspondence bias" as the source of the phenomenon by inferring that the source of the special phenomenon was a special mechanism" (p. 309).

The strategy of finding and reifying differences contrasts with the ability of strong theories to parameterize underlying psychological processes and to make precise quantitative predictions at the level of perception or behavior (Kruglanski & Gigerenzer, 2011). As Busemeyer and Wang (2000, p. 171) put it, "accurate *a priori* predictions to new conditions are the hallmark of a good scientific theory."

The experimental, difference-seeking, epistemology has become a metaphor of mind. There is a direct – and perhaps projective – link between how psychologists think about research design and how they think about human reasoning (Gigerenzer, 1991). As experimentation is often considered the strongest and most rational way of doing research, it is not surprising that experimenters themselves have modeled human rationality after the experimental ideal. This argument is intuitively appealing. Humans attempt to learn about nature, but nature reveals her secrets only reluctantly. Controlled experiments are a powerful method to pose questions in such a way that compel nature to yield relevant data. If the epistemology of controlled laboratory experiments and ordinary perception are essentially the same, it seems clear that what people need to do in their everyday thinking is to approximate—if not replicate—the strategies involved in experimentation. Doing so will make their reasoning rational. If the key to experimentation is the controlled variation of conditions and the statistical comparison of results between conditions, then the hallmark of rationality should also be variation and comparison. Indeed, people can improve their judgments, or at least recognize, the limitations of what they think they know by considering the opposite, counterfactuals, or non-sampled outcomes (Hastie & Dawes, 2010).

Despite these undeniable virtues of experimental reasoning, we suggest that the attempt to model everyday rationality on scientific method bears certain risks. We show that the mandate of looking for differences often fails to tell us *which* differences are relevant. With the example of research on self-evaluation and intergroup perception, we show that individuals (and the psychologists who study them) engage in a variety of comparisons resulting in contradictory inferences regarding human rationality.

In the final section of this article, we return to the question of how theories that are both strong and parsimonious overcome some of the barriers raised by the conventional strategy of seeking and isolating differences, reifying them, and passing judgment on the ordinary perceiver. To illustrate an opportunity for progress, we describe a theory of social perception that integrates a variety of phenomena that are traditionally studied in isolation, makes precise point-predictions, and does not hasten inferences about social perceivers' (ir)rationality.

1.1. Experimentation

Since Wilhelm Wundt (1874) worked to emancipate psychology from philosophy, the laboratory experiment has been the backbone of psychological research (Runkel & McGrath, 1974). There is an elegance to a well-designed experiment. At its best, an experiment is a controlled intervention that harnesses Mill's (1872/1973) method of difference. A difference between treatment and control conditions forces nature to support one causal claim over another. At worst, this esthetic obscures the question of why the experiment was conducted in the first place. Today, the goal of most psychological experiments is to reject an undesired null hypothesis (Gallistel, 2009; Krueger, 2001). Most null hypotheses express the expectation that the true effect size is exactly zero. A theory seeking to corroborate a substantive claim by rejecting a null hypothesis is weak (Meehl, 1978). It only makes a directional claim. A theory