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Mind the Gap: In Praise of Informal Sources of Formal Theory

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Theory-making can be taught and learned. New theories aim to fill a gap in existing explanations. Although mathematical statements are privileged elsewhere, social psychology's impactful theories tend to be verbal, perhaps because of the arbitrary scales of our variables. Good theories posit causal relations, attempt coherence, form a good narrative, aim for parsimony, are testable, prove fertile, and solve problems. Theories' sources can be intellectual, personal, group, or worldview. As long as the theory is stated logically, any source can be heuristic.

Theory intimidates many people. Coming up with a theory is scary. Even recognizing the beginnings of one is tough. Learning how to develop a theory is difficult, knowing the criteria for a good theory is challenging, and publishing in theory journals is hard. Yet as a field we rarely help people in this area. We rarely teach theory construction, and still more rarely publish it. In my experience, theory construction is the hardest issue in regard to training graduate students and mentoring junior colleagues, and it is not even a feasible topic for undergraduates because it is beyond their level. The time-honored general exam or doctoral-qualifying paper assignment to "write a *Psych Bull* or *Psych Review* paper" is more often honored in its breach, that is, in the inexperience of most graduate students, who lack the training and the confidence to think at that level. Still, one has to start somewhere. This special issue of *Personality and Social Psychology Review* addresses this lacuna in our training and provides an opportunity for reflection and conversation.

Because theory is tough and intimidating, many modest researchers avoid it, assuming they do not have the ability, the insight, or the assertiveness to push their own ideas about how a particular principle operates. Many researchers are shy about proposing theories, mainly because the process seems deep and mysterious, the purview of a favored few. Nevertheless, even the modest can generate useful, testable theory. The courage to do so comes from the creativity offered by recognizing multiple sources of theoretical inspiration. What they all have in common is minding the gap, noticing what's missing and constructing something to bridge it. My goal in this article is to demystify the process of theory construction, to remove it from the domain of the few, the proud, the daring. Though I have not done the analyses, the domain of publishing theory probably shows clear personality differences (favoring the confident), power differences (favoring the established), and perhaps demographic differences (favoring groups traditional in the field). But this need not be the case.

If it is true that theory construction intimidates those who feel less entitled, perhaps part of the cause lies in our ideas about where theory comes from and what it has to look like. Formal intellectual sources of theory and formal mathematical statements of theory appear to be the gold standard prized by the field's gatekeepers. But it does not have to be that way.

Sources of theory can come from empirical, moral, social, political, and personal perspectives, as well as abstract intellectual ones. All sources have equal validity, as long as the ultimately stated principles meet the standards of good theory and the premises are coherent and testable (more on these topics later). Likewise, statements of theory need not be mathematical or programmable to be valuable. Theory does have to be logical, consistent, and clear, but words and figures can accomplish these criteria. This article defines theory in social and personality psychology, discusses origins of theory, and describes criteria for good theory. The domain of theory indeed may be owned predominantly by the favored few. But my refrain remains: This need not be the case.

Definition of Theory

Theory aims to fill a gap in explaining important phenomena. In basic research, a theory is a system of logical principles that attempts to explain relations among natural, observable phenomena. A theory appears in abstract, general terms and generates more specific hypotheses (testable propositions).

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What Our Theory Is Not (Usually)

As just noted, the gold standard in many sciences, including parts of psychology, is a formal mathematical statement. In social psychology, that is demonstrably not how we most often operate. In our field, theories stated as math models have had less impact than theories stated in ordinary language. At one point, I estimated 600 theories in social psychology (S. T. Fiske, 2001); very few were stated formally.

Our field's predilection for verbal statements of theory could stem from any number of factors: Our broad psychological traditions go back to philosophy and its logical, though not quantitative, formal statements. Many of our early classic theories from the 1940s and 1950s contain quantitative elements, but these are neglected in their further testing. Our social psychological origins include Lewin's (1951) field theory, which included physics-like predictions of the effects of social forces on the locomotion of individuals in their life space. But we remember and honor Lewin for his general principles (the combination of person and situation causes behavior, the importance of goals originally expressed as valences). Likewise, one of our most popular grand theories, Festinger's (1957) dissonance theory, included some logical and mathematical statements (e.g., two relevant cognitions are dissonant if one implies the obverse of another, and the ratio of consonant to dissonant cognitions determines their inconsistency). But we do not teach operationalizations of dissonance that test the logical and ratio predictions; rather we teach the classic, compelling demonstrations of "less is more." Likewise, Heider's (1958) balance theory contained some explicitly logical and mathematical predictions (the product of the triad's three valences must be positive for balance), but it is the general principles that survive (unit relations predict positive sentiment relations). And this is the case for Heider's attribution principles. Likewise, Thibaut and Kelley 's (1959) theory of interpersonal relations contained explicit payoff matrices and formal statements, but their impact (outside of economic game theory) has extended mostly to verbal derivations in the close relations literature (outcome interdependence as a barometer of closeness).

In contrast, some of the most overtly algebraic models have had their biggest influence outside of social psychology. Ajzen and Fishbein's (1973; see also Ajzen, 1991) theory of reasoned action—although enthusiastically recognized in social psychology—has truly triumphed in health and consumer behavior. Anderson's (1974) information integration theory—now rarely cited in social psychology—had carpeted consumer psychology. And, to stretch a social psychological affiliation, Kahneman and Tversky's (1979) prospect theory certainly is recognized in economics, but it is their heuristics (Tversky & Kahneman, 1974) that were equally if not more appreciated by the Nobel Award committee.

Finally, many of our most impactful current theories are verbal statements of principles and do not even originate in mathematical principles. Steele's (1997) stereotype threat theory—one of the most active current areas of research—contains verbal principles. So does Greenberg, Pyszczynski, and Solomon's (1986) terror management theory, Taylor and Brown's (1988) theory of positive illusions, Wegner's (1994) theory of thought suppression, and Devine's (1989) dissociation theory of stereotypes, to name a few. But traditions and current norms are not sufficient explanations of why our theories are primarily verbal, not quantitative.

Perhaps more important are the arbitrary scales of our variables. We measure most of our variables on verbally anchored rather than absolute metrics. Our dependent measures include Likert scales far more often than dollars or blood pressure readings. Our independent variables include the presence or absence of some context (e.g., salience) or attribute (e.g., race) that would be hard to quantify on a scale common to other independent variables (e.g., positive or negative feedback). Our variables are often categorical (yes or no) or ordinal (less or more); scales are rarely ratio, and even more rarely on a shared metric. Of course, we can standardize our variables across their various metrics, but the fact that we do not attempt to predict such data as absolute levels of bacteria, temperature, or dollars probably contributes to our verbal orientation.

A critic from a more quantitatively oriented field might suggest that our predilection for stating theories in words stems from the verbal more than quantitative intelligence of our scholars. But our extensive and sophisticated use of statistics belies that criticism. Formal statements lurk behind our predictions of statistical main effects, interactions, and correlations. The last time I checked, our everyday statistical models intimidate few doctoral researchers.

A related complaint might be that words are not specific enough to be truly scientific (D. W. Fiske, 1986). But we are forced to define our terms conceptually and operationally, which requires precision. There's no evidence that theories stated verbally have more wiggle room than theories stated mathematically. Both have to be operationalized, and the specificity comes in how the empirical work is done.

I am not arguing that verbal theories are necessarily ideal, merely that from a pragmatic point of view, they have been the dominant approach in our field. Nowak (this volume) argues for the importance of computational models when emergent properties result from lower-level dynamic interactions among many fine-grained units. I do not doubt the utility of formal models in addressing such complexity or the success of any of the well-known quantitative theories cited earlier. I am merely (a) observing, (b) trying to explain,

and (c) exploring the potential advantages of verbally stated theories, which are rarely defined or defended. In a scientific hierarchy that values allegedly hard sciences over supposedly soft sciences, we tend to de-value the difficult work of making precise, rigorous verbal statements of testable theory.

I suspect, in the end, that the reason for our overwhelmingly common verbal statements of theory has more to do with what works. People easily understand theories stated in words; they know how to operationalize them; they know how to communicate them to colleagues, students, and the public. And they do predict behavior.

Criteria for Theory

A good theory generates hypotheses for research, so it meets the following criteria:

- posits causal relationships,
- attempts to be coherent,
- tells a good story,
- aims for parsimony,
- is testable,
- proves fertile, and
- solves problems.

Causality

In a heavily experimental science, the first criterion, causality, hardly needs to be mentioned. We typically frame theories as models of causal processes, complete with mediators and sometimes moderators. The theory of stereotype content, for example, posits that stereotypes of social groups result from perceived social structure and lead to discriminatory behavior (S. T. Fiske, Cuddy, Glick, & Xu, 2002). Certain combinations of perceived social structure (group status and competition) lead to certain kinds of stereotypes on specific dimensions (competence and warmth), as well as certain kinds of emotions (pity, contempt, envy, or pride); these stereotypes and emotional prejudices in turn encourage different kinds of discriminatory behavior (helping, avoiding, fighting, affiliating). Almost all social psychological theories contain causal statements.

Coherence

The causal nature of social psychological theory (e.g., A $\rightarrow$ B $\rightarrow$ C) makes the criterion of coherence easier to meet. If coherence consists in being clear, logical, and consistent, then the leap from a causal statement to a coherent theory ought to be a small step at most. In practice, however, theorists often stumble over this leap, starting with the challenge to be clear. In my graduate and advanced undergraduate classes, I ask students, for each article they read, to first to state its hypothesis (not even the underlying theory). We're all amazed at how hard this is. Researchers often fail to state their hypothesis (let alone their theory) in simple, findable form. To find a simple declarative sentence from the article or abstract is a rare treat. Apart from stating theory and hypotheses in a simple, straightforward way, the theory's terms need explicit definition. Again, researchers surprisingly often fail to define key terms, relying instead on the illusion of a shared, common-sense vocabulary.

Being logical and consistent—the other parts of coherence—means that aspects of the theory follow one from the other and do not contradict each other. One part follows from the other. Meanings of terms do not shift from one part of the theory to another.

Good Story

So far, all this is obvious, perhaps, but what is less obvious is the related criterion, namely to tell a good story. Like any communication, a good theory needs to pose a problem and solve it. Like a good story, if the theory reflects common experience in a new way, so much the better. If the theory has a surprise ending, so much the better. Telling a good story suggests that theory has that ineffable quality of flow and enables the reader to make sense of it, remember it, and communicate it to others. Many perfectly good theories have died prematurely because their authors failed to frame them as a good story. This is not merely the hocus-pocus of strategic communication. I would argue that telling a good story, or making a narrative, in Bruner's (2002) recent terms, requires a coherence of thought that creates a beginning, middle, and end, showing that the theory posits a process that solves a problem.

Parsimony

A good theory is parsimonious. In telling a story, it must not recruit excess baggage (we are talking short story or, even better, a poem or, better yet, haiku). Specifically, the aim is to account for the observed phenomena using as few concepts and processes as necessary. Like telling a good story, this is partly an aesthetic criterion and partly a practical one. Parsimony means jettisoning any needless concepts, which makes the theory easier to test, both because it presents less to measure and manipulate and because it is easier to know whether all the parts operate as predicted.

Testability

A good theory must appear in testable terms. Famously, if it predicts every result and its opposite, then no evidence could undermine it. In practice, if it is too

broad or general, it will be hard to test. "Attitudes predict behavior" as a theory is certainly true sometimes, for some people, and for some attitudes. But it is so broad as to be insufficiently subject to empirical test with diagnostic results.

Fertility

A good theory has the potential to and ultimately does, generate scientific fruit. Because they love it or because they hate it, scientists flock to test it. The fruitful theory is heuristic, in the sense that it is useful for generating research ideas. It may also provoke constructive theoretical debate from opposing perspectives. Other theories may spring up to counterpoint its view. A fruitful theory applies to many situations, not simply one narrowly defined, artificial, hothouse setting. It needs to be robust enough to transplant easily and widely. In contrast, a sterile theory yields no empirical offspring and survives in only one narrow ecology.

Solving Problems

Good theory stems from recognizing a problem in society or in science, noticing the gap, and attempting to bridge it. Identifying the problem is easily half the work. Hence, I tell my students, as they read papers or hear talks, to listen to the still small voice of discontent. Identifying the problem and seeking conceptual insights to solve it is the final hallmark of good theory. Sometimes the problem is one that the real world admits (why people litter) or one the whole field admits (when people assimilate and when they contrast). But sometimes the problem is a discomfort or contradiction identified by the theory builder. How and where do theorists and would-be theorists find these problems?

Origins of Theory

Intellectual Sources

Novices typically assume that all theory stems from intellectual sources, and, indeed, much of it does. That is, existing theory may prove inadequate because it fails to explain existing data. Theories in social psychology are rarely disproved; more often, the weight of the available evidence suggests that they do not explain most observations very well. As the evidence accumulates, the theory falls from favor, and people write new ones that take its place, accounting for the accumulating data. A key to one's own incipient theory can often be a theoretical discontent, a sense that existing theory is inconsistent, fails to explain relevant phenomena, or fails any of our criteria for good theory. Not only reading existing theory but revisiting old theory can generate new theories. My own work on the continuum model of impressions (S. T. Fiske, Lin, & Neuberg, 1999; S. T. Fiske & Neuberg, 1990) explicitly united two previous lines of theory first identified by Asch's (1946) two processes of impression formation. Similarly, the Zajonc (1994) theory of emotional expressions as regulating cerebral blood flow came in part as a historical revival of an older theory proposing similar ideas but without modern techniques to test it. Many modern theories derive from William James (1890) and Fritz Heider (1958) as rich sources of ideas to mine, reframe, and test afresh.

A theory can also come from general metatheoretical perspectives. Taking an evolutionary perspective, a culture contrast, a self-enhancement principle, or a consistency viewpoint to its logical implication for a particular phenomenon can generate theory. For example, James's (1890) pragmatic approach (which I translated as "thinking is for doing;" S. T. Fiske, 1993) helps provide theories of goal-based responses, such as our theories of interdependent outcomes and impression formation (Fiske, 2000). Such theories test people's reactions against the practical functions served.

Intellectual sources of theory include synthesis across areas. Theory can come from reading within or between similar literatures within social psychology. One might synthesize apparently competing models within one specialized area, such as aggression, relationships, impression formation, or attitude change. One volume collects theories of two-mode processes that often bring together two equally valid modes that operate under different circumstances, and each model has its typical domain of specialization (Chaiken & Trope, 1999).

Between areas in psychology, a theory can borrow attachment ideas from developmental psychology and apply them to close relations, and from there apply them to group membership. Across disciplines, ideas can come from other social sciences that operate at a more macro level. Some work in political psychology, for example, elucidates assumptions about psychological processes that seem unrealistic, or at least undeveloped, but still salvageable for new theory. Innovative theory building occurs at the boundaries between disciplines and subdisciplines.

Most often, novices assume that one develops theory by critiquing the theory of others. In my opinion, pure critique of a specific other is not the most profitable source of ideas. Building theory merely as a reaction to someone else's theory limits one's scope. Someone once described it as picking at the toenails of giants. Better to stand on their shoulders. Responding to an entire area of work, of course, is a different story.

Personal Sources

Intuition, hunches, and personal experience also motivate theory. We can all learn to listen for that nag-

ging voice that says something personally important is missing. Even novices can sense that their own experiences, or those of close others, have been overlooked. These gaps may represent a more widespread but neglected phenomenon. Case studies can provide inspiration, from real people or even fiction, songs, and movies. Even conversations about human nature can result in theory. A common hobby, casual psychological insight can generate ideas for theory, but only well-trained psychological scientists know how to formulate a logical series of testable propositions from it. Heider (1958) famously argued that common-sense psychology was a foundation for systematic analyses by theoreticians of interpersonal perception processes.

Group Sources

Moving up a level, people's perspectives on social psychology depend partly on group identity. It is no accident that Tajfel and Turner's (1979) social identity theory developed in Europe, where people's nationalities constitute important sources of pride as well as mutual stereotyping. This contrasts with American theories of stereotyping that emphasize the biases of stereotypes and their neglect of the individual. Because the United States has the longest continuous history in the world of receiving immigrants, it makes sense that our theories would emphasize moving from group categories to perceptions of individuals.

Likewise, it is no accident that as more members of traditionally stigmatized groups entered the field, social psychology began to develop more theories of stereotyping from the target's perspective (Crocker, Major, & Steele, 1998). As more women entered the field, a focus on gender differences gave way to a focus on gender stereotyping and gender identity. Maybe this too is no accident. My own first sense that I might have something unique to contribute came from a personality course and a sex differences course. In both courses, the theorists seemed to label and interpret their variables to favor their own group's standing on the measure. For example, I wondered why field dependence (on which women and people of color scored high) could not be labeled field sensitivity. Similarly, the same groups scored high on the inferior form of control called external or secondary locus of control, but more recent work suggests that it may be a more communal, collectivist orientation reflected as interpersonal harmony (Morling & S. T. Fiske, 1999). Values or at least group identity implicitly informs the methods as well as the framing of variables. That is, initial findings that women conform more than men gave way to the understanding that it depends on the self-perceived (and gender-related) domain of expertise (Eagly & Carli, 1981).

Clearly, the distribution of various groups in our field will inform the theory we happen to create, pursue, and find interesting. Theorists' social group identity informs their perspectives on existing viewpoints. My naive insights into values informing theory were stimulated no doubt by the fact that most of the researchers whose theories I studied were men. When I graduated from college, the editorial board of the *Journal of Personality and Social Psychology* included 1 woman and 20 men, the reviewers for each issue averaged about 1 woman and 20 men, the senior authors averaged about 1 woman per issue, and the editors included none. Social psychology included women more rapidly than many other areas of psychology and science generally. So I am not singling out our field as remiss; indeed Ellen Berscheid (1992) argued that we did not create a separate gender ghetto for research and theory, isolating such researchers in outsider roles (e.g., women's studies) precisely because women entered the field so early.

I am also not advocating an argument that most women or only women (or blacks, Asians, Latinos) can take their groups' issues as theoretical challenges. Far from it. Rather I am arguing that, on average, certain theoretical concerns may arise more frequently for some groups compared to others. My point is simply this: As socially significant groups participate, then the field gains the variety of perspectives needed for a healthy set of dialogues. An underrepresented point of view can counter unconscious biases in prior work or in the dominant approach.

Worldview Sources

A critic might argue that postmodern deconstructionism would result from taking people's group identities as proxies for their values and theoretical proclivities. This is not that argument. This argument suggests that a theorist's explicit value system—religious, ethical, political—can create a conviction that some basic truth is missing. Given that suspicion, then the development and testing of the theory have to play by well-established and rigorous scientific rules. Whatever the researcher's value-driven perspective (e.g., the religious origins of the good Samaritan hypothesis in Darley & Batson, 1973), the theory itself must be logically reasoned and the research methodologically rigorous to survive scientific review, which justifiably suspects any research with a value-based agenda. Nonetheless, assuming that all theory has implicit perspectives to defend, one must carefully articulate and conceptually define one's premises. In that case, a value-inspired agenda remains a valid perspective for generating theory on a continuum with other sources of inspiration for theory.

Conclusion

The processes of generating theory need not be mysterious or inaccessible. All theory aims to fill a gap

in explanations of observable phenomena. Social psychology theory often takes a verbal form rather than a formal (e.g., mathematical) form. But it adheres to the standard conceptual criteria: positing causality, being coherent, telling a story, adhering to parsimony, maintaining testability, proving fertile, and solving problems. Sources of theory range from intellectual to empirical to personal to group to worldview, and, traditionally, the field has valued them in that sequence. Arguably, however, the less formal origins lead to at least equally impactful theory because they are more provocative and heuristic.

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