

Bridging the Great Divide Between  
Theoretical and Empirical Management Research

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### Abstract

Management research places a great premium on theory development. Despite this emphasis, concerns have been expressed regarding the extent to which management theories are tested in empirical research. This article reviews evidence concerning the connections between theoretical and empirical management research and reports an investigation that examines the correspondence between the propositions presented in 20 highly cited theoretical articles and the hypotheses stated in 361 empirical articles that cite the theories. Results indicate that the vast majority of propositions in the cited theoretical articles are not translated into hypotheses in the citing empirical articles. This disconnect manifests a great divide between theoretical and empirical management research. Implications of these results are discussed, and potential solutions are offered.

There is little dispute that management research places enormous value on theory. The importance of theory is evidenced in various ways. For instance, volumes of work have been devoted to the theory development process and the hallmarks of strong theory (Bacharach, 1989; Corley & Gioia, 2011; Elsbach, Sutton, & Whetten, 1999; Suddaby, Hardy, & Huy, 2011; Sutton & Staw, 1995; Van de Ven, 1989; Whetten, 1989). In conjunction, the mission statements of our most prestigious journals emphasize that each submission should strive to make a theoretical contribution (Colquitt, 2011; Mayer & Sparrowe, 2013; Sutton & Staw, 1995). Researchers who have established themselves as developers of theory are heralded as the great minds of our field (Smith & Hitt, 2005). Indeed, some management scholars have observed that the priority placed on theory has become an obsession, such that theory development is treated as an end unto itself (Hambrick, 2007; McKinley, 2010; Nord, 2012).

Given the overriding importance of theory in management research, it is essential to ask what becomes of the theories we develop. Do these theories spawn thriving streams of research? Are they tested, refined, and perhaps rejected through rigorous empirical research? Do they serve as the driving force behind the research cycle that characterizes a systematic research program, in which theories are translated into hypotheses that are empirically tested, producing results that prompt researchers to modify or abandon the theory (Runkel & McGrath, 1972)? These questions are central to the enterprise of theory development, because if our theories are not sources for empirical research, then we should question the return we are receiving from our enormous investment in theory development.

In this article, we examine the extent to which theories influence empirical studies in management research. We begin by underscoring the essential role of theory in the research process that applies across the social sciences, including management. We then review available evidence to shed light on how management theories are utilized and underscore gaps and

ambiguities that merit further investigation. Next, we report an investigation that examines how 20 highly cited theoretical articles published in the *Academy of Management Review (AMR)* have influenced empirical research, focusing on the extent to which propositions in these theories are translated into hypotheses in empirical articles that cite the theories. The evidence we report documents a great divide between theoretical and empirical management research that is far more substantial than previous evidence suggests. We conclude by discussing the implications of this divide, addressing its causes and potential remedies.

### The Role of Theory in the Research Process

We frame our assessment of the relationship between theoretical and empirical management research in terms of the cycle that is often used to characterize the research process in the social sciences (Runkel & McGrath, 1972; Singleton & Straits, 2009), including management research (Chatman & Flynn, 2005). The cycle is portrayed in Figure 1, which shows the connections between theory, propositions, hypotheses, research design, observation, data analysis interpretation of findings, and empirical generalizations. Although the cycle is shown as a circle, it is better conceived as a spiral, such that a theory that initiates an empirical study is subsequently modified by the results of the study, such that the theory is successively modified, refined, or perhaps abandoned as the cycle progresses. Moreover, the cycle need not start with theory, as when a stream of research is triggered by observations whose interpretation stimulates the development of theory that subsequently leads to further empirical research. Thus, the research cycle is amenable to deductive and inductive research, depending on whether the cycle begins with theory or observation, respectively.

The research cycle shown Figure 1 is usually characterized as an idealized state of affairs. In practice, research often deviates from the cycle by skipping steps, breaking links, or stalling at certain junctures. For example, empirical generalizations are sometimes used to bypass theory

and propositions to directly generate hypotheses, as when findings from previous research are cited as justification for predictions (Sutton & Staw, 1995). In other instances, researchers might leap from observation to the interpretation of findings without rigorous data analysis, which can undermine the conclusions and theoretical implications drawn from a study. In addition to short-circuits such as these, the cycle can stall at various stages, as when research wallows in the dust bowl of empiricism with little connection to theory (Latham, 2011; Miner, 2007) or theories are developed with little connection to empiricism, as when theories are not stated in falsifiable terms (Bacharach, 1989; Popper, 1959) or theory development is treated as an end in its own right (McKinley, 2010). It is this cause of stagnation in the research process that we pursue in this article, focusing on the extent to which theoretical propositions are translated into hypotheses in management research.

#### Previous Examinations of Theory Testing

Concerns over the seeming disconnect between theoretical and empirical research have been expressed in the management literature. For instance, Pfeffer (1982, p. 1) observed that, in organizational research, “Theories . . . proliferate along with measures, terms, concepts, and research paradigms,” and as a consequence, “the domain of organization theory is coming to resemble more of a weed patch than a well-tended garden.” In a similar vein, Eden (2004, p. 171) reflected on his tenure as associate editor at the *Academy of Management Journal (AMJ)* and lamented that the *AMJ* publication policy “encourages the development of one-time minitheories that serve as platforms for specific submissions but are never revisited,” which in turn “has left a trail of one-shot theories that contribute little to the field’s cumulative scientific endeavor.” Along similar lines, Hambrick (2007, p. 1350) bemoaned that “our field has an absurdly high ratio of ideas to tests of ideas,” and McKinley (2010, p. 62) cautioned that our tendency to treat theory development as the ultimate goal of organizational research represents

a displacement of ends that has generated “an accumulation of untested theories” about which the field has little consensus, let alone knowledge about the validity of the many theories that have been promulgated in the field.

Qualms such as these regarding the chasm between theoretical and empirical management research have been pursued empirically. Kacmar and Whitfield (2000) drew a random sample of 70 articles published in *AMR* and *AMJ* from 1988 to 1990 and identified the citations to these articles, resulting in 1,528 cites. Kacmar and Whitfield examined each of these citing articles to determine whether the cited *AMR* and *AMJ* article was “the main focus of the article or if it was simply referenced.” To be considered the main focus, the cited article had to constitute “a major basis for the article,” as exemplified by testing the ideas, theory, or model posited in the cited article. Using this criterion, Kacmar and Whitfield concluded that, for *AMR*, 9% of the citing articles conducted empirical tests, and for *AMJ*, 6% reported empirical tests.

Using a grounded theory approach, Halbesleben, Wheeler, and Buckley (2004) examined theory articles published in *AMR* to determine the characteristics of articles that were more likely to generate empirical tests. The *AMR* articles were separated into three groups: (a) highly cited articles that were cited at least once in *AMJ*; (b) highly cited articles that were not cited in *AMJ*; and (c) articles that had never been cited. The *AMR* articles that had been cited in *AMJ* were regarded as having received “empirical consideration” (p. 1210), and the differences between these articles and those in the other two groups were examined. Based on this assessment, Halbesleben et al. concluded that the *AMR* articles that had been cited in *AMJ* were more likely to have concise introductions that integrated different domains, propose measures and designs suited to the theory, and reiterate the need for the proposed theory. However, Halbesleben et al. added that, in some cases, the *AMJ* studies that cited the *AMR* articles merely mentioned the article in passing or used it to define a construct to be tested empirically. Nonetheless,

Halbesleben et al. indicated that “some *AMJ* articles provided complete tests of theory presented in its associated *AMR* article” (p. 1222), although the frequency of such tests and the criteria used to draw this conclusion were not discussed.

Golden-Biddle, Locke, and Reay (2006) examined citations of three articles (Chatman, 1991; Dutton & Dukerich, 1991; Oliver, 1991) to evaluate the extent to which knowledge claims in the source articles materialized in the citing articles. Based on 489 citations from 176 citing articles, Golden-Biddle et al. developed a typology to describe how citations represented knowledge claims: (a) *central comprehensive*, which fully represent central knowledge claims of the source article; (b) *central selective*, which capture part of the central knowledge claims of the source article; (c) *peripheral*, which represent content incidental to main knowledge claims of the source article; (d) *restyled*, in which links to knowledge claims of the source article are indirect and reword; and (e) *typified*, which characterize the source article as belonging to a general body of research. Using this typology, Golden-Biddle et al. examined the text surrounding each citation and determined that the vast majority of citations were central selective, representing 63.6% of the total. The remaining citations were classified as peripheral (21.3%), typified (8.0%), restyled (5.3%), and central comprehensive (1.8%).

Colquitt and Zapata-Phelan (2007) assessed the extent to which 667 *AMJ* articles published between 1963 and 2007 developed and tested theory. For this assessment, the authors developed 5-point rating scales for theory development and theory testing, the latter of which is relevant for our present purposes. The anchors for the theory testing scale were: (1) inductive or grounds predictions with logical speculation; (2) grounds predictions with reference to past findings; (3) grounds predictions with existing conceptual arguments; (4) grounds predictions with existing models, diagrams, or figures; and (5) grounds predictions with existing theory. Colquitt and Zapata-Phelan collapsed these five ratings into three categories, whereby scores of 1

or 2 were regarded as low levels of theory testing, a score of 3 was viewed as moderate levels of theory testing, and scores of 4 or 5 were considered high levels of theory testing. Colquitt and Zapata-Phelan determined that about 14% of the *AMJ* articles examined tested theories drawn from sources outside the article, whereas an increasing number of studies both developed and tested theory, constituting nearly 40% of the *AMJ* articles published in 2007.

Some researchers have examined the extent to which the work of specific authors has spawned empirical tests. For instance, Mizruchi and Fein (1999) analyzed 160 articles that cited DiMaggio and Powell's (1983) article on institutional isomorphism. Of the 160 articles, 115 (72%) briefly mentioned DiMaggio and Powell (1983) but did not delve into its content. Among the remaining 45 articles, 19 (12%) explicitly discussed concepts from DiMaggio and Powell (1983), and 26 (16%) went further by attempting to operationalize and empirically test one or more of these concepts. Harzing (2002) analyzed a citation network of 60 publications on expatriate failure rates. The network was constructed by locating articles that mentioned the terms "expatriate" and "failure" and conducting a backward search of references cited in the context of these terms, stopping when no new articles were located. Harzing determined that 38 of the 60 articles made what she considered "empty" references, which "do not contain any original evidence for the phenomenon under investigation, but strictly refer to other studies to substantiate their claim (Harzing, 2002, p. 130). Lounsbury and Carberry and (2005) conducted a citation analysis of work by Max Weber using articles published in the *Administrative Science Quarterly* from 1956 to 2002. Citations were coded as to whether they represented substantive ideas developed by Weber or were merely ceremonial, such that they "cited Weber but engaged in little or no discussion of the relation of the particular work of Weber with the article's theoretical argument or empirical analysis" (p. 507). From this analysis, Lounsbury and Carberry concluded that citations of Weber's work became increasing ceremonial, exceeding



80% of the citations by 2002. In like fashion, Anderson (2006) analyzed 328 articles that cited *The Social Psychology of Organizing* (Weick, 1969, 1979) and reported that a handful studies tested some elements of Weick's work, but such studies were characterized as "quite rare" (Anderson, 2006, p. 1687). Finally, Anderson and Sun (2010) assessed 301 articles that cited Walsh and Ungson's (1991) *AMR* article on organizational memory, examining the manner in which the ideas in the cited article were used. Anderson and Sun concluded that a very large percentage of the citations were ceremonial, representing a superficial consideration of the content of the Walsh and Ungson article.

The foregoing evidence suggests several generalizations regarding the connections between theoretical and empirical management research. First, sources that range from informed observation to contextual citation analysis indicate that theories in management research are rarely exposed to empirical tests. Second, although the possible causes of this disconnect are varied, they seem to implicate systemic forces that underlie management research, such as the publication practices of journals and the apparent premium placed on developing new theory rather than testing existing theory. Third, without exception, the implications of this disconnect are seen as problematic, triggering questions about the direction and value of management research. These problems are brought into sharp relief by comparing the pattern described by the available evidence to the research cycle in Figure 1, which shows that failure to translate theories into empirical research stalls the research cycle and undermines the accumulation of knowledge.

Although the evidence reviewed here is suggestive, it has several shortcomings. First, some of the evidence is based on informal accounts of management research. Although these accounts come from respected scholars whose conclusions coincide with those from citation analyses, it would be useful to further substantiate these accounts using methods that disclose the sources of the information considered and how it was evaluated. Second, studies that reported

citation analyses tend to rely on criteria that are not described in clear and concrete terms. As a result, it is difficult to determine how the authors concluded whether a theory had, in fact, been translated into an empirical test. Third, determining the extent to which a theory is tested is not a binary assessment. Rather, theories usually consist of multiple propositions, each of which can be translated into hypotheses with varying degrees of fidelity. These details must be considered in order to accurately gauge the connections between theory and empiricism. Fourth, discussions of theory testing do not distinguish the translation of propositions into hypotheses from empirical tests of those hypotheses. We submit that the connections between theoretical and empirical management research are best understood by comparing theoretical propositions to hypotheses set forth in empirical studies, as opposed to evaluating how well hypotheses are subsequently tested. Certainly, it is absolutely essential to test hypotheses using methods that are appropriate and valid, but evaluating methods used to test hypotheses obscures the fundamental question of whether empirical studies draw from theory in management research in the first place, which is the focus of our investigation.

## Method

### *Sample*

To evaluate the extent to which propositions from management theories are translated into hypotheses in empirical studies, we began by identifying the 20 most cited theory articles published in *AMR* during the 25-year period from 1985 to 2009, using Thompson Reuter's Web of Science (Edwards & Berry, 2010). We focused on articles presented as attempts to develop theory, as opposed to those that take stock of previous theory or discuss the theory development process. For each of these articles, we identified 20 empirical articles that were themselves the most cited among the articles that cited each theory. This procedure could potentially yield 400 citing articles (i.e., 20 empirical articles for each of 20 theories). However, the final sample of

empirical articles was 361 because some empirical articles cited more than one theory. We screened the empirical articles to include those published in 30 core management journals, as identified by Podsakoff, MacKenzie, Podsakoff, and Bachrach (2008), and presented hypotheses that were explicit, thereby allowing direct comparisons of the hypotheses with the propositions stated in the cited theory.

### *Measures*

To gauge the correspondence between the propositions and hypotheses, we developed a scoring protocol that centered on the similarity between the variables involved and the predicted relationship between the variables. In most cases, the propositions and hypotheses consisted of simple binary predictions of the form  $X \rightarrow Y$  with a statement of the sign of the relationship (e.g., as  $X$  increases,  $Y$  will increase, thereby indicating a positive relationship). The similarity between the variables stated in the propositions and hypotheses was rated on a three-point scale in which 0 = *not at all similar*, 1 = *somewhat similar*, and 2 = *completely similar*. Assigning scores of 0 and 2 was relatively straightforward, in that it was reasonably simple to judge whether the variables involved were completely different or identical. Ambiguities arose when scoring variables as somewhat similar, due to the inherent subjectivity of such judgments. To ameliorate this ambiguity, we operationalized *somewhat similar* as cases in which the variables described the same construct at different levels of abstraction (e.g., job satisfaction versus pay satisfaction) or with respect to different referents (e.g., organizational commitment versus work group commitment). In addition to scoring the similarity of the  $X$  and  $Y$  variables involved in the propositions and hypotheses, we assessed the similarity of the sign of the relationship (i.e., positive or negative), the form of the relationship when it was specified (e.g., linear versus curvilinear), and any moderating or mediating variables involved in the propositions and hypotheses.

## Results

The 20 *AMR* articles included in our assessment are shown in Table 1. The total number of citations for the 20 articles was 10,324, yielding an average of approximately 516 citations per article. The topics of the articles provided what we considered a reasonable representation of the domain of management research. The number of citations per article ranged from 319 for the theory of trust formation presented by McKnight, Cummings, and Chervany (1998) to 1,168 for the integrative model of trust developed by Mayer, Davis, and Schoorman (1995).

The journals that contained the empirical articles that cited the 20 theory articles are shown in Table 2. Of the 30 journals identified by Podsakoff et al. (2008), 21 published empirical studies that cited at least one of the 20 theories. The journals represent a blend of management disciplines, including organization behavior, organization theory, strategic management, human resource management, decision-making, entrepreneurship, and international business. The journal in which most of the empirical articles appeared was the *Academy of Management Journal* with 92 articles, followed by the *Strategic Management Journal* and the *Journal of Applied Psychology*, with 70 and 47 articles, respectively.

The similarity between the propositions and hypotheses was judged by the second and third authors of the present article. The scoring protocol was extensively discussed and tested using illustrative propositions and hypotheses drawn from the target articles. After the protocol was refined, both judges independently scored a representative theoretical article and its associated empirical articles, rating the similarity between its 10 propositions and the 388 hypotheses in the citing empirical articles, yielding 3,880 pairs of propositions and hypotheses. Interrater agreement was assessed using weighted kappa (Cohen, 1968) with free marginals, which is appropriate in cases where judges have no prior knowledge of the expected distribution of their scores (Brennan & Prediger, 1981). Weights were assigned to take into account the

ordinal nature of the scores, such that a difference between 0 and 2 was assigned twice the weight of a difference between 0 and 1 or between 1 and 2. The scores from the two judges yielded a weighted kappa of .86, corresponding to an agreement rate of 90%. This level of agreement was deemed adequate for the scoring task (cf. Fleiss, Levin, & Paik, 2003), at which point the judges separately scored half of the remaining theory articles and their citing empirical articles.

Similarity ratings for the propositions and hypotheses are summarized in Table 3. The table entries are the average ratings for the propositions presented in each theory article. For instance, the first three columns under the *X* heading indicate the average number of times the independent variables in the propositions in each theory article and the hypotheses in the citing empirical articles were judged as 0 = not at all similar, 1 = somewhat similar, and 2 = entirely similar. The fourth column under the *X* heading give the percentage of similarity scores that were greater than zero, meaning the independent variables for the propositions and hypotheses were judged as at least somewhat similar. The same interpretation applies to the four columns under the *Y* heading, which reports scores for the dependent variables in the propositions and hypotheses. The columns under the *X* and *Y* headings integrate scores from the *X* and *Y* columns, in which 0 means either *X* or *Y* was 0, 1 means both *X* and *Y* were 1, 2 means *X* and *Y* were 1 and 2 in either combination, and 4 means *X* and *Y* were both 2 (mathematically, the scores under the *X* and *Y* heading are the products of the scores under the *X* heading and the *Y* heading, whereby multiplication was used to operationalize a logical “and” connecting the scores). Scores greater than zero, as summarized in the % > 0 column, indicate the percentage of instances in which the independent and dependent variables of the propositions and hypotheses were both at least somewhat similar. The column labeled C% > 0 is a corrected percentage that takes into account instances in which a hypothesis was at least somewhat similar to one proposition in terms of the

independent and dependent variables, which effectively removes that hypothesis from contention for the remaining propositions (i.e., a hypotheses cannot match more than one proposition when the independent and dependent variables differ across the propositions). The two rows at the bottom of the table report averages across the 20 theory articles. The first row is the raw average of the entries in the table, and the weighted average corrects for differences in the number of propositions presented in the theory articles.

As shown in Table 3, the correspondence between the independent variables stated in the propositions and hypotheses was meager at best. According to the weighted average, the vast majority of the comparisons indicated that the independent variables in the propositions and hypotheses were judged as describing different constructs, representing more than 95% of the comparisons. Of the remaining comparisons, most were judged as somewhat similar, with a small minority considered exactly similar. The similarity of the propositions and hypotheses for the dependent variables was higher but nonetheless small in absolute terms, with approximately 85% of the comparisons judged as not at all similar. The remaining comparisons were about evenly split between somewhat similar and exactly similar.

We now turn to the results that integrated the independent and dependent variables, as shown in the last columns of Table 3. These results show that the vast majority of comparisons indicated that both variables in the propositions and hypotheses were not even somewhat similar. According to the weighted average, nearly 99% of the comparisons indicated that either the independent variable or the dependent variable did not match between the propositions and hypotheses. When corrected for comparisons in which the independent and dependent variables were both at least somewhat similar, the percentage of mismatches drops slightly to about 98%. Looking across the theoretical articles shows that the greatest degree of similarity between propositions and hypotheses when the independent and dependent variables were both taken into

account was found for Lumpkin and Dess (1996), Mitchell et al. (1997), and Jones (1991). An examination of the empirical articles responsible for these results indicated that they were often written by the authors of the respective theory articles, suggesting that theoretical propositions are more likely to be cast as hypotheses by the authors of the theories themselves.

### Discussion

The results reported in this study indicate that propositions presented in highly cited theoretical articles are rarely cast as hypotheses in the citing empirical articles. Similarity between the variables involved in propositions and hypotheses was higher for dependent variables and for independent variables, but for both types of variables, similarity was meager in absolute terms. When the independent and dependent variables were considered concurrently, taking into account both variables in the  $X \rightarrow Y$  predictions, the degree of similarity between propositions and hypotheses dropped markedly, indicating that nearly 98% of the propositions were not captured by the hypotheses presented in empirical articles citing the theories in which the propositions appeared.

These results indicate a troubling state of affairs for management research. As a field, management places a great premium on theory development, and yet it appears that the theories we develop bear little connection with empirical research. The results presented here indicate that the correspondence between theory and empiricism is substantially lower than suggested by previous assessments (e.g., Colquitt & Zapata-Phelan (2007; Halbesleben et al., 2004; Kacmar & Whitfield, 2000), which paint a picture that is troubling but less extreme than that presented here. Rather, our results give weight to the concerns expressed by Eden (2004), Hambrick (2007), and McKinley (2010), showing that these concerns are not only justified, but signify a problem that is substantial in magnitude.

Our results have several implications for management research. First, we should come to

grips with the disconnect between theoretical and management research. Our findings indicate that this divide is quite substantial, and we believe it merits serious attention. Second, the causes for this divide should be confronted. These causes can be traced to systemic issues in the field, such as the premium placed on theory development for its own sake and publication practices that encourage the development of new theory in every empirical article. Third, we should take corrective action. Possibilities include creating venues for publishing research that tests existing theory without the pretense of developing new theory and recognizing the value of replication (Ferguson & Heene, 2012; Hubbard, Vetter, & Little, 1998) and embracing studies that truly challenge theories, even putting them to rest (Gray & Cooper, 2010). By pursuing remedies such as these, there is hope that we can begin to bridge the great divide between theoretical and empirical management research.



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Table 1

*The 20 Most Cited Academy of Management Review Articles, 1985-2009*

Article	Number of Citations
Mayer, Davis, and Schoorman (1995)	1,168
Dyer and Singh (1998)	899
Eisenhardt (1989)	811
Oliver (1991)	624
Ring and VanDeVen (1994)	621
Greenhaus and Beutell (1985)	566
Trevino (1986)	563
Gist and Mitchell (1992)	466
Walsh and Ungson (1991)	463
Jones (1991)	456
Mitchell, Agle, and Wood (1997)	454
Reed and DeFillippi (1990)	441
Zahra and George (2002)	423
Lumkin and Dess (1996)	371
Das and Teng (1998)	354
Cordes and Dougherty, 1993	335
Dutton and Jackson (1987)	333
Greenwood and Hinings (1996)	330
Aldrich and Fiol (1994)	327
McKnight, Cummings, and Chervany (1998)	319
Total Citations	10,324

Table 2  
*Journals Containing the Citing Empirical Articles*

Journal	Number of Articles
<i>Academy of Management Journal</i>	92
<i>Strategic Management Journal</i>	70
<i>Journal of Applied Psychology</i>	47
<i>Administrative Science Quarterly</i>	36
<i>Organization Science</i>	29
<i>Journal of International Business Studies</i>	21
<i>Journal of Management Studies</i>	14
<i>Journal of Business Research</i>	13
<i>Journal of Business Venturing</i>	13
<i>Journal of Management</i>	12
<i>Management Science</i>	10
<i>Human Relations</i>	9
<i>Organizational Behavior and Human Decision Processes</i>	8
<i>Journal of Vocational Behavior</i>	7
<i>Journal of Organizational Behavior</i>	5
<i>Decision Sciences</i>	4
<i>Journal of Occupational and Organizational Psychology</i>	3
<i>Personnel Psychology</i>	3
<i>Leadership Quarterly</i>	2
<i>Group &amp; Organization Management</i>	1
<i>Human Resource Management</i>	1
Total Articles	400

*Note:* Of the 400 empirical articles, 69 appeared more than once, given that they cited more than one theory.



Table 3

*Summary of Similarity Ratings for Independent and Dependent Variables in the Propositions and Hypotheses*

Proposition	X				Y				X and Y					
	0	1	2	% > 0	0	1	2	% > 0	0	1	2	4	% > 0	C% > 0
Mayer et al.(1995)	153.27	3.73	2.00	3.60%	135.36	15.64	8.00	14.87%	158.45	0.00	0.09	0.45	0.34%	0.35%
Dyer and Singh (1998)	109.53	2.63	0.84	3.07%	103.42	6.63	2.95	8.48%	112.42	0.58	0.00	0.00	0.51%	0.54%
Eisenhardt (1989)	190.20	3.50	0.20	1.91%	172.50	21.50	0.00	11.08%	192.90	0.90	0.20	0.00	0.57%	0.59%
Oliver (1991)	159.40	2.60	0.00	1.60%	127.00	35.00	0.00	21.60%	159.60	2.40	0.00	0.00	1.48%	1.66%
Ring and Van de Ven (1994)	143.43	5.57	0.00	3.74%	144.57	2.14	2.29	2.97%	148.86	0.14	0.00	0.00	0.10%	0.10%
Greenhaus and Beutell (1985)	338.10	30.30	2.40	8.82%	313.70	49.90	7.40	15.44%	364.30	5.70	0.80	0.20	1.81%	2.10%
Treviño (1986)	118.00	1.65	0.35	1.67%	94.35	24.95	0.70	21.38%	119.45	0.55	0.00	0.00	0.46%	0.49%
Gist and Mitchell (1992)	152.89	5.78	2.33	5.04%	136.11	14.89	10.00	15.46%	157.22	1.78	1.22	0.78	2.35%	2.69%
Walsh and Ungson (1991)	115.00	0.00	0.00	0.00%	114.75	0.25	0.00	0.22%	115.00	0.00	0.00	0.00	0.00%	0.00%
Jones (1991)	80.75	13.25	34.00	36.91%	105.50	7.25	15.25	17.58%	116.50	0.75	2.25	8.50	8.98%	11.65%
Mitchell et al. (1997)	163.00	19.00	5.00	12.83%	114.00	73.00	0.00	39.04%	163.00	19.00	5.00	0.00	12.83%	12.83%
Reed and DeFillippi (1990)	108.14	3.93	6.93	9.12%	113.86	0.29	4.86	4.32%	117.93	0.00	0.00	1.07	0.90%	0.99%
Zahra and George (2002)	153.25	11.50	2.25	8.23%	145.75	16.38	4.88	12.72%	165.75	1.25	0.00	0.00	0.75%	0.77%
Lumpkin and Dess (1996)	176.00	11.60	11.40	11.56%	144.53	5.67	48.80	27.37%	189.20	0.00	3.27	6.53	4.92%	13.88%
Das and Teng (1998)	121.60	10.00	3.40	9.93%	121.80	5.20	8.00	9.78%	133.00	1.00	1.00	0.00	1.48%	1.55%
Cordes and Dougherty (1993)	213.24	4.67	5.10	4.38%	165.48	21.05	36.48	25.80%	219.29	1.29	1.52	0.90	1.67%	2.41%
Dutton and Jackson (1987)	175.13	1.13	5.73	3.77%	174.07	3.53	4.40	4.36%	180.40	0.00	0.40	1.20	0.88%	0.98%
Greenwood and Hinnings (1996)	152.00	4.50	1.50	3.80%	127.61	13.22	17.17	19.23%	156.39	0.22	0.94	0.44	1.02%	1.18%
Aldrich and Fiol (1994)	128.63	0.00	0.38	0.29%	127.50	1.00	0.50	1.16%	129.00	0.00	0.00	0.00	0.00%	0.00%
McKnight et al. (1998)	133.03	2.23	0.74	2.18%	108.48	10.23	17.29	20.23%	135.06	0.16	0.61	0.16	0.69%	0.85%
Average	154.23	6.88	4.23	6.62%	139.52	16.39	9.45	14.65%	161.69	1.79	0.87	1.01	2.09%	2.78%
Weighted Average	154.80	5.27	3.20	4.88%	137.16	14.01	12.13	15.23%	160.93	0.83	0.67	0.86	1.31%	2.05%

*Note:* For the columns under the X and Y headings, entries under the headings 0, 1, and 2 are counts of judgments indicating no match, partial match, and complete match, respectively. For the columns under the heading “X and Y,” entries under the headings 0, 1, 2, and 4 are the products of the counts for X and Y. Thus, 0 means either X or Y was 0, 1 means both X and Y were 1, 2 means X and Y were 1 and 2 in either combination, and 4

means  $X$  and  $Y$  were both 2. Under each heading, the columns labeled % > 0 are the percent of scores that were greater than zero, meaning that  $X$ ,  $Y$ , or both at least partially matched the proposition.

Figure 1  
*The Research Cycle*

