RESPONSE

Taking Workplace Decisions Seriously: This Conversation Has Been Fruitful!

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Abstract

We are gratified by the large number of commentaries to our focal article (Dalal, Bonaccio, et al., 2010) that advocated greater integration of industrial—organizational psychology and organizational behavior (IOOB) with the field of judgment and decision making (JDM). The commentaries were uniformly constructive and civil. Our disagreements with the commentaries are mild and are limited primarily to the roles of external validity, internal validity, and laboratory experiments in IOOB. For the majority of our response, we attempt to build on the views expressed in the commentaries and to articulate some thoughts regarding the future. We structure our response according to the following themes: barriers to cross-fertilization between IOOB and JDM, areas of existing and potential JDM-to-IOOB cross-fertilization, areas of potential IOOB-to-JDM cross-fertilization, and ways to increase (and ideally institutionalize) cross-fertilization. We hope our focal article and our response to the commentaries will help to ignite exciting basic research and important practical applications associated with decision making in the workplace.

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Silvia Bonaccio, Telfer School of Management, University of Ottawa; Reeshad S. Dalal, Department of Psychology, George Mason University; Scott Highhouse, Bowling Green State University; Daniel R. Ilgen, Michigan State University; Susan Mohammed, The Pennsylvania State University; Jerel E. Slaughter, Eller College of Management, University of Arizona. When we began working on our focal article (Dalal, Bonaccio, et al., 2010), one of our primary goals was to engage the industrial—organizational psychology and organizational behavior (IOOB) community in an open and frank discussion of how our field and the field of judgment and decision making (JDM) could enrich each other. We hoped that our IOOB colleagues would agree that this was a discussion worth having. If the large number of published commentaries (let alone the considerably larger number of submitted commentaries)

is any indicator, the IOOB community did agree. We are gratified by the interest and grateful to the commentators.

A few of the commentaries disagreed to some degree with us regarding (a) whether there had already been a great extent of cross-fertilization and (b) whether crossfertilization is beneficial to the two fields. Hayes and Wooldridge (2010) argue that there has already been substantial overlap between these two areas. We agree—and are obviously pleased—that there have been some instances of extant crossfertilization (indeed, we mentioned some in our focal article). However, from our perspective (see also the metrics we presented in our focal article, such as the representation in each other's journals and conferences), those instances are too few and far between.

Whyte (2010) appears to be slightly more optimistic than us regarding the amount of cross-fertilization that has already taken place. Regardless of whether the glass is viewed as half full (Whyte, 2010) or nearly empty (us), there does not appear to be much substantive difference between Whyte's views and our own. In the case of goal setting, for example, there has been a lot of IOOB research and some JDM research. However, as Whyte indicates, IOOB researchers have typically taken little notice of the JDM research on goal setting-and, on the rare occasions that they have (e.g., Locke & Latham, 2009), the reaction has been less than positive. Whyte notes that his view "is not inconsistent with the view that there remains untapped potential in leveraging JDM to elucidate phenomena that have traditionally captured the attention of IOOB researchers and practitioners." Ouite so.

Connolly (2010) notes, as we did in our focal article, that recent exhortations for IOOB–JDM integration appear to have had limited success. However, Connolly then goes on to imply that such exhortations, per se, may be of limited utility (a sentiment echoed by Staw, 2010). Here, in contrast, we find ourselves in the "glass half full"

camp: We agree with Connolly that the obstacles to cross-fertilization (discussed subsequently) are formidable, but we also believe that the benefits of cross-fertilization make it worth our while to attempt to surmount these obstacles.

Finally, Staw (2010) argues against a full integration of IOOB and JDM because "JDM research often misses (or willfully avoids) many of the most crucial elements of work behavior." As discussed further in a subsequent section, we do not disagree with the need for generalizability. In addition, Staw does appear to be in favor of a moderate amount of crossfertilization. Given the current low level of cross-fertilization, we do not believe that his position is implacably opposed to ours.

On the other hand, many commentators share our hopefulness that this ongoing exchange will be fruitful. To take just two examples, Reb (2010) maintains that "bridging the two [fields] is intellectually rewarding" and that the early difficulties incurred in research at the intersection of these two fields will fade away in time, whereas Rosen, Shuffler, and Salas (2010) are kind enough to say that our focal article "identified a potentially monumental opportunity" for interdisciplinary discussion and collaboration.

We found both the disagreements and the agreements helpful in further clarifying our thinking regarding the benefits of, obstacles to, and ways of achieving integration between IOOB and JDM. In the rest of this article, we group the commentaries and our responses (including our thoughts about the future) according to some of the themes we had identified in our focal article (see Table 1 in focal article).

Barriers to Integration

Barriers Attributable to Differences in Philosophical Tradition

In our focal article, we argued that JDM typically follows a normative, paradigmatic approach involving formal models; in contrast, IOOB typically focuses on outcomes

and selects models based on what appears most useful in each case. The former approach facilitates the accumulation of knowledge (e.g., Pfeffer, 1993), whereas the latter facilitates the examination of a broader set of problems. We also maintained that, in our view, the two philosophical approaches should be viewed as complementary rather than immiscible.

The commentaries advance this discussion on two fronts. First, Hayes and Wooldridge (2010) observe that the disorganized state of the JDM literature is a major challenge to integrating its findings into IOOB. Indeed, they liken the state of JDM to the pre-Big Five state of the personality literature. A related issue is that, as Sumner, Bragger, Om, and Malandruccolo (2010) note, the JDM literature is spread across many academic disciplines, which hampers summarization. We would like to see decision-making researchers make more of an effort to integrate that field via broad-level reviews, perhaps structured around fundamental questions (e.g., what constitutes a good decision?). Nonetheless, as we discussed in our focal article, JDM researchers have already identified several useful mid-level normative (and descriptive) models-and we argued that IOOB would benefit from a greater focus on normative models. Second, commentators note that more attention needs to be paid by JDM researchers to individual differences as "valid variance rather than error variance" (Hayes & Wooldridge, 2010; see also Goodwin, 2010). We agree completely (as we noted in our focal article), and we point readers to a recent paper on this topic by one of us (Mohammed & Schwall, 2009). However, as Weiss and Adler (1984) have noted, the laboratory may well constitute a "strong" situation in which the impact of individual differences is muted (see also Meyer, Dalal, & Hermida, 2010). Thus, the study of individual differences in decision making may be more profitable in field situations or indeed in laboratory situations deliberately designed to be "weaker" than usual.

Barriers Attributable to Differences in Methodological Tradition

In our focal article, we had discussed several methodological barriers to integration between IOOB and JDM. We had argued that the fields' two methodological approaches should be viewed as complementary and that IOOB should be much more open to laboratory research. The commentators responded to our contentions, focusing primarily on external validity and attendant issues.

The various comments can be summarized by Rosen et al.'s (2010) observation that JDM researchers sometimes "control the reality out of the research" and Staw's (2010) contention that "[a]Ithough JDM tries to control away the context, organizational researchers savor it." The chief concerns focus on the lack of mundane realism in JDM experiments: The commentators take issue with the tasks used to study phenomena, the samples employed, and the focus on a specific time point in the decision-making process. Specifically, the commentators contend that the laboratory-based simple tasks employed by IDM researchers do not approximate the complexity of organizational life. As such, the findings derived from these research paradigms are, in their view, of little relevance to IOOB, where a contingency perspective is needed to fully understand the phenomena in question (see, e.g., Hayes & Wooldridge, 2010; Rosen et al., 2010; Staw, 2010). In addition, the student—or, more generally, nonexpert—samples routinely used in JDM research gave pause to some of our commentators (Rosen et al., 2010; Staw, 2010). Finally, Rosen et al. note that although JDM research tends to focus on the ultimate decision, the process that leads up to this decision is equally important and should not be overlooked.

We respond in two ways. First, we call for a more nuanced and less "black or white" discussion of external validity (generalizability). Second, we remind readers that a lack of internal validity is as harmful

as a lack of external validity. Each of these issues is discussed in more detail below.

External validity. We agree with portions of the critiques expressed by the commentators, but we maintain that a more nuanced discussion on external validity is needed. IDM research would certainly gain by diversifying its samples and settings (and indeed its stimuli and criteria; Hayes & Wooldridge, 2010). For example, we believe that JDM would benefit a great deal—both per se and in terms of its exportability to other fields such as IOOB—from the development of a comprehensive and well-accepted taxonomy of judgment and decision-making tasks (see also Hayes & Wooldridge, 2010). Moreover, in a subsequent section of this article, we discuss alternatives to, and variations on, traditional laboratory experiments.

These agreements notwithstanding, we reiterate that it is the theory (not the sample or setting) that does or does not generalize (Highhouse, 2009; Highhouse & Gillespie, 2009) and that any sample and setting to which the theory is expected to generalize is "fair game" for research. Many JDM theories are at least intended to apply to all human beings across a variety of contexts (as Staw, 2010, notes). In other words, these theories are intended to generalize to both laboratory and field settings and to both basic research and applied issues. In our view, therefore, it would therefore be shortsighted to write JDM research off solely because of its settings and samples.

We do agree that, if researchers are interested in the study of decisions in workplace settings, it would be a good idea to assess whether the predictions from these theories really do apply equally to all employees in all work settings. Given that JDM researchers have unfortunately not thus far been particularly interested in workplace decision making, IOOB researchers could pick up the research baton. Rather than dismissing the JDM theories out of hand because of the samples and settings used by JDM researchers, such an approach would emphasize the potential

importance of these theories to IOOB and would then go about testing these theories in workplace contexts. These demonstrations of the generalizability of JDM theories to IOOB contexts can be quite informative (Hodgkinson & Healey, 2008; Reb, 2010) and represent a good starting point for cross-fertilization. As Reb notes, however, they should ultimately evolve into a bidirectional emphasis on improving theory. For example, with regard to the cognitive heuristics and biases identified by JDM researchers, a focus on individual differences and workplace contexts could be beneficial in studying (at least) two related issues: (a) the relative importance of individual differences and workplace contexts versus heuristics and biases (see Goodwin, 2010) and (b) individual differences and workplace contexts as moderators of the effects of heuristics and biases. Thus, IOOB could build on JDM theories and thereby contribute to JDM.

Internal validity. It seems fair to say that JDM has privileged internal validity over external validity, but it seems equally fair to say that IOOB has privileged external validity over internal validity. The example of the "holy grail" of IOOB—namely, the relationship between job satisfaction and job performance—should suffice to demonstrate the deleterious consequences of neglecting internal validity. As Judge, Thoresen, Bono, and Patton (2001) powerfully illustrate, despite a staggering amount of research (more than 300 studies, composed of more than 50,000 employees, and conducted over more than 70 years), it is far from clear whether (a) satisfaction causes performance, (b) performance causes satisfaction, (c) satisfaction and performance are reciprocally related, or (d) the relationship is spurious. Indeed, plausible theoretical rationales exist for each of these four possibilities.

Unfortunately, a neglect of internal validity is not limited to the above case but instead seems fairly pervasive in IOOB. We submit that internal validity is necessary not only for science but also—because

causation is a much higher evidentiary standard than correlation—for evidence-based practice. We therefore urge IOOB to pay more attention to internal validity and to use research designs (certainly including laboratory experiments) conducive to demonstrations of internal validity. As Hodgkinson and Healey (2008) put it, "[a] blanket call for more field and fewer laboratory studies is . . . unwarranted" (p. 405).

Summary. The issue of which methodological tradition to adopt should not be one of "either/or" but instead one of "both/and." The proper study of decisions in the workplace requires the best of both the IOOB and the JDM methodological traditions. We need both field and laboratory research and both external and internal validity. We should, however, recognize that external validity involves the generalizability of the theory. Moreover, IOOB's neglect of internal validity and its seeming distrust of laboratory experiments are, in our view, counterproductive. Although this has been said before (Ilgen, 1985), it bears repeating: Laboratory research in IOOB should be a question of when, not if.

Other Barriers

The commentaries discuss three additional barriers to cross-fertilization. First, as Staw (2010) astutely observes, the handoff of the research baton from JDM to IOOB—or vice versa—will not necessarily be seamless or even pleasant. For example, as we alluded to in a previous section (see also Whyte, 2010), the JDM perspective on goalsetting appears to have been somewhat unsettling to IOOB researchers. Each field must be prepared to make concessions and must remain open to the possibility of inconvenient truths emanating from the other field. It is worth remembering that, as Reb (2010) puts it in his commentary, "[d]ifferences, rather than similarities, open up opportunities for value creation."

A second barrier is the lack of knowledge, among IOOB researchers and

practitioners, of JDM theories and methods. Sumner et al. (2010) present convincing evidence that JDM is greatly underrepresented in traditional IOOB graduate training curricula. As they say, "If there is no training, then there can be very little integration of the two fields." Sumner et al. therefore argue that, "because JDM is so important for truly understanding organizational behavior and individual behavior in organizations, all [IOOB graduate] programs should involve at least basic training in its methods, models, and applications." Importantly, they provide several concrete recommendations to achieve this. The reader may not be surprised to learn that we concur completely. We heartily endorse Sumner et al.'s recommendations, and we add that several teaching resources of potential use to IOOB are provided by the Society for Judgment and Decision Making at http://sjdm.org/ svllabi.

The final barrier discussed at some length in the commentaries is a set of institutional and personal factors that facilitate inertia. For example, Reb (2010) rightly notes that being well versed in two fields is a difficult endeavor and that breadth of knowledge can come at the cost of depth of knowledge. In a related vein, Connolly (2010) remarks that deviating from one's research agenda to pursue interdisciplinary work may be a less-than-appealing proposition for many researchers whose time is already a scarce commodity.

It was not our intention to discount the power of these "mundane incentives" (as Connolly, 2010, calls them)—they are a potentially serious impediment. Yet, the integration we propose need not immediately involve dramatic paradigm shifts but instead could begin with incremental steps toward common ground. Moreover, we believe that the gains to science-and evidence-based practice from crossfertilization are sufficiently substantial as to warrant an active attempt to reorient these mundane incentives such that they aid, or at least do not actively obstruct, interdisciplinary research.

Areas Where JDM Has Already Enriched, or Has the Potential to Enrich, IOOB

In our focal article, we discussed several substantive and methodological areas where JDM can inform IOOB or had already done so. As evidenced by the paragraphs below, several commentaries expanded on these areas and provided additional examples. We believe the examples identified in the commentaries are an indication of the high quality of work that is likely to be the outcome of increased collaboration between these two areas.

First, D. K. Dalal (no relation to R. S. Dalal, an author on the focal article and this response) and his colleagues (Dalal, Diab, Balzer, & Doherty, 2010) identified several ways in which the lens model and the research designs with which it is associated (e.g., policy capturing) can benefit the practice of IOOB. The applied focus of this commentary reminds the reader that IOOB practitioners, too, would benefit from cross-fertilization with JDM. Importantly, the emphasis on sampling situations and stimuli in the Brunswikian tradition of judgment research (within which the lens model is based) is likely to be particularly attractive to IOOB.

Second, Bottom and Kong (2010; see also Goodwin, 2010; Kuhn, 2010) discuss the complexities engendered by the contextual factors (such as interdependence) inherent in decision making in organizations. They argue that this complexity reduces the appropriateness of expected utility theory as a benchmark for the study of decisions in organizations. We agree with the importance of studying context: Although theories based on the principles of expected utility have been employed profitably in the domains of interest to IOOB—for example, motivation (Naylor, Pritchard, & Ilgen, 1980; Vroom, 1964), attitudes (Ajzen, 1991), and employee selection (Brogden, 1949)—the complexity of these theories has proliferated over time in response to the need to model contextual factors. Additional (non-utility-based) mid-level

normative and descriptive theories can and should be employed in IOOB research.

Finally, Rosen et al. (2010) make a strong case for the utility of naturalistic decision making (NDM) vis-à-vis understanding organizational processes as studied by IOOB, especially in terms of improving decision-making performance. We agree, though we are also in agreement with their comment to the effect that NDM needs to improve the overly context-specific nature of its models and tests thereof. To be clear, we do believe that NDM, despite being a very young discipline, is likely to be of interest to IOOB researchers and practitioners. We also agree that JDM has been overly focused on the choice component of the decision process and that NDM has a role in other components of the process, such as problem detection and situation awareness.

Areas Where IOOB Has the Potential to Enrich JDM

In our focal article, we concentrated primarily on what IOOB had to gain by incorporating JDM theories. However, we indicated that cross-fertilization could just as easily flow in the opposite direction, from IOOB to JDM, and we provided some examples in this regard. The commentators provide many additional examples.

Of relevance to the previous discussion of external validity, several commentators (Bottom & Kong, 2010; Goodwin, 2010; Kuhn, 2010; see also Staw, 2010) argue that organizations are complex and that decision making in organizations involves multiple—and often incompatible—goals, of which decision accuracy is only one. Politics, impression management, uncertainty, social cohesion, and so forth are also important considerations for managers, but these considerations, the authors argue, are not typically studied in JDM research. It is in this context that Goodwin argues that although research on managerial forecasting has thus far been dominated by the JDM approach, the IOOB approach has much to offer.

These are good points. We did not mean to imply that accuracy is the only

or even necessarily the most important motive associated with workplace decisions. Non-accuracy factors associated with workplace decisions definitely need to be studied. However, the presence of these non-accuracy factors does not negate the necessity of studying decision accuracy—as the commentators would surely agree. For example, Goodwin (2010) provides some compelling examples that illustrate the need to study how non-accuracy factors influence the importance of accuracy to decision makers in organizations, whereas Kuhn (2010) correctly notes that JDM research on advice taking could benefit by studying how nonaccuracy factors influence the accuracy of advisors' recommendations and decision makers' choices.

As another example of how IOOB can contribute to JDM, Kuhn (2010; see also Rosen et al., 2010) focuses on the difficulties of training managers to make better decisions. Once again, we are pleased to note the practitioner-oriented angle of this commentary. Of particular interest to us was Kuhn's contention that training employees to avoid decision biases may be less useful than implementing carefully considered structural solutions. We agree with the importance of structural solutions (though here too we feel that a "both/and" approach is preferable to an "either/or" approach), and we point the reader to several creative examples of structural solutions discussed in the popular book *Nudge* (Thaler & Sunstein, 2008). In our view, the focus on context by IOOB researchers provides an invaluable opportunity to study such structural solutions and, ultimately, to implement them profitably in organizations.

Finally, Reiter-Palmon and Hullsiek (2010) also argue for a focus on outcomes other than decision accuracy. They contend, and we agree, that JDM research can be improved by expanding its criterion space in a manner similar to creativity research (which emphasizes not just the accuracy or quality of solutions but also their quantity, novelty, and so forth) and by following creativity research in studying individual differences and using

more complex tasks (see also Hayes & Wooldridge, 2010). Moreover, as research on creativity and NDM (Rosen et al., 2010) have begun to do, JDM could focus more on stages of the decision process both prior and subsequent to choice (see Mohammed & Schwall, 2009).

Increasing Integration: Suggestions for Moving Forward

In our focal article, we noted that the journal *Organizational Behavior and Human Decision Processes* is an ongoing attempt at cross-fertilization. We suggested several additional strategies to increase cross-fertilization, some research based and others more structural. A forthcoming SIOP Frontiers series book (edited by Highhouse, Dalal, and Salas) will adopt JDM and NDM perspectives on IOOB topics and should also prove helpful to cross-fertilization. We are additionally pleased to see several excellent thoughts on cross-fertilization emanating from the commentaries.

First, the comments include ideas stemming from paradigmatic considerations. For example, Reb (2010) discusses the role of theory-driven, process-oriented research as a way to bridge the gap and to inform a variety of decisions from the perspective of the employee (e.g., job choice and voluntary turnover) as well as that of the organization (e.g., employee selection and involuntary turnover). Yet, Reb argues that the applicability of a decision process model to job performance per se is less straightforward—but that it is nonetheless possible when "performance [is] considered as the aggregation of decision outcomes over a certain period and certain performance dimensions." In other words, Reb contends that "a decision and its outcomes can be roughly equated with a performance episode." We concur, and we add that such a view—which is very different from the way job performance has traditionally been viewed in IOOB—is likely to prove particularly useful in studying momentary (i.e., state) performance and distinguishing

it from characteristic (i.e., trait) performance (see also Dalal & Hulin, 2008).

Second, the commentaries include some important concrete recommendations. For example, Byham (2010) proposes assessment centers (e.g., "in-basket/box" and problem analysis exercises; see also Staw, 2010) as a way to increase collaboration between IOOB and IDM. As discussed in a previous section, we believe that there is a strong case for the use of traditional laboratory experiments in IOOB; yet, we definitely agree with Byham's assertion that "[a]ssessment centers are an excellent way of studying decision making." Assessment centers have the potential to provide not only a good balance of internal and external validity (including, as they do, what Staw, 2010, refers to as "organization like" samples and settings) but also a good source of information into decision-making processes and outcomes. As Byham recommends, researchers should attempt to partner with organizations to obtain existing archival assessment center data or, better yet, to jointly develop new assessment center tasks that allow for the testing of specific hypotheses of interest.

Failing this, Byham (2010) suggests that researchers use assessment-center-type work simulation tasks in the laboratory, using undergraduate students. In a related vein, Staw (2010) discusses the issue of laboratory researchers constructing their experimental tasks "in ways that more accurately capture the organizational experience" (see also Hayes & Wooldridge, 2010) and argues for qualitative approaches such as observations and unstructured interviews as useful domain-entry techniques that will allow researchers to construct laboratory tasks "that mimic the tugs of" organizational settings. We point the reader to several papers by James Terborg (e.g., Terborg, Castore, & DeNinno, 1976; Terborg & Davis, 1982; Terborg & Miller, 1978) as excellent examples of various types of work simulations involving students.

Third, the commentaries provide several "institutional" recommendations. For example, Sumner et al. (2010) provide a

thoughtful approach to integrating JDM materials into an IOOB-focused graduatelevel seminar. In addition, Reb (2010) suggests that interdisciplinary collaboration could help overcome the significant barrier of having to be an expert in several disciplines. He notes that academic and other research institutions typically tout the importance of interdisciplinary research but do little to actually facilitate such research. We agree wholeheartedly. In fact, some of the authors of this article have observed that, although interdisciplinary work is officially encouraged at their academic institutions, the administration of expenses and revenues, and the way these moneys are shared across departments, has hindered the institutionalization of interdisciplinary research groups. At the level of the two disciplines of IOOB and JDM, opportunities for institutionalizing cross-fertilization are perhaps easier to implement. The ideas in the commentaries included special issues in journals, special sessions at conferences, special funding for interdisciplinary work focused on practical problems, and other interdisciplinary endeavors (Connolly, 2010; Reb, 2010).

Finally, Connolly (2010) suggests that it is important to systematically examine the "mundane factors" that steer researchers toward "conservative persistence" within a particular academic discipline despite evidence of the "intellectual and practical importance" of cross-fertilization. Ideally, the outcome of such an examination would be additional ideas to incentivize, or at least avoid disincentivizing, cross-fertilization.

We believe that these excellent suggestions, if embraced by those within the IOOB and JDM communities, will surely spur more interdisciplinary work and begin the *institutionalization* of cross-fertilization. As Whyte (2010) notes, it would be "unfortunate ... if young IOOB researchers were to ignore the opportunities presented by JDM to push IOOB in a direction that it might not otherwise go and to unlock important insights that might otherwise remain hidden." IOOB, likewise, has much to contribute to JDM. Sustained openness

and effort will be required to bridge the philosophical and methodological traditions of both fields, but we are gratified by the response to our focal article, and we feel that the conversation we initiated has been fruitful. Let the conversation continue!

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