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# Realizing the full potential of psychometric meta-analysis for a cumulative science and practice of human resource management☆☆☆

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## ABSTRACT

This might be the most opportune time for Human Resource Management (HRM) to benefit from psychometric meta-analysis. Explosion of empirical research, often with conflicting results, hide important takeaways that can guide evidence-based applications of HRM. The science of HRM can turn to meta-analyses and meta-analytic thinking as the antidote to the so-called replication crisis afflicting social sciences in general. In this paper, we focus on issues and potential problems that may threaten the veracity and usefulness of contemporary meta-analyses in HRM. We contend that these problems must be correctly tackled for meta-analyses to realize their full potential in advancing HRM science and practice. We address the problems of identification and inclusion of all relevant effect sizes, as well as appropriate corrections for unreliability and range restriction. We offer concrete proposals to enable inclusion of unpublished, practitioner research and data in HRM meta-analyses.

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## 1. Introduction

Human Resource Management (HRM), like other applied sciences, has two lofty ideals: (1) creation of cumulative knowledge based on trustworthy empirical evidence and (2) support of applied practices based on evidentiary science. Empirical studies that address applied questions serve both ideals and can grow the knowledge base of the field. The meta-analytic methods used in HRM were originally invented almost 40 years ago to address the problem of validity generalization (see Schmidt, 2015, for a brief history). Situationally varying validities were creating the impression that psychological tests were only valid for specific purposes, in specific situations, and in specific settings. Schmidt and Hunter (1977) tested the hypothesis of situational specificity by statistically pooling available validation studies, correcting for statistical artifacts such as unreliability in measures and range restriction. The techniques they developed to show validity generalization have over time expanded to quantitative summaries of virtually all HRM effect sizes where more than a few studies have estimated a focal relationship, and are now referred to as psychometric meta-analysis. This is in recognition of the fact that the methods introduced by Schmidt and Hunter correct for

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biasing effects of statistical artifacts such as unreliability and range restriction, whereas other meta-analytic methods only concern themselves with sampling error. Another noteworthy feature of psychometric meta-analysis is that it is based on a random effects model rather than a fixed effects model (Schmidt, Oh, & Hayes, 2009).

Validity generalization studies first illustrated the sizable, distorting impact statistical artifacts have on individual study results, and led to the application of psychometric meta-analytic techniques to virtually all areas of inquiry in HRM research. Indeed, applications of psychometric meta-analysis have led to an epistemological paradigm shift in HRM. The best peer-reviewed journals routinely publish meta-analyses (Aguinis, Dalton, Bosco, Pierce, & Dalton, 2011; Shen et al., 2011). Textbooks rely on meta-analyses for summary conclusions. Meta-analyses are cited at greater rates than primary empirical articles (Patsopoulos, Analatos, & Ioannidis, 2005). Nevertheless, the scientific contributions of meta-analysis should not be judged solely by its popularity among researchers, however. The true influence of meta-analysis stems from its ability to answer important research questions with more robustness than conventional empirical research techniques. While meta-analysis may seem most appropriate in fields where precision in estimates is desired and fields where sampling and measurement errors may obscure the significance of observed effects, scientists in myriad disciplines have come to understand that the techniques of meta-analysis reveal true magnitudes of relationships and allow for more stable empirically-based conclusions. Our field is no exception.

Against this backdrop, the past decade has brought changes to the way that research is conducted and disseminated in our field. These include the ability: to gather data from very large samples and accessing big, existing datasets; to input and analyze data with lightning speed; to identify, search for and gather relevant published research articles en masse within a matter of minutes; and to instantaneously share research with colleagues globally (Spellman, 2015). These are indeed profound changes in the way that research is conducted and disseminated. To be sure, they affect all scientific disciplines, yet forces unique to our applied field may exacerbate their consequences for the science and practice of HRM.

For the scholarly community, these changes have brought about an explosion of published research, open source journals, and unprecedented volume of studies from non-English speaking countries. Samples have shifted from traditional employee, applicant, and student categorizations to include paid panels, remote workers on platforms such as Amazon's Mechanical Turk, and participants recruited through other online channels (e.g., Facebook users). Merits and demerits of these samples are being discussed in the literature (Landers & Behrend, 2015). With increased ease in conducting and disseminating primary studies, two unintended consequences have afflicted HRM: greater premium on novelty rather than replicability in published research (Campbell & Wilmot, *in press*) and theory worship (i.e., placing a premium on theory development and refinement over empirical discovery; Hambrick, 2007).

For practitioners, the volume and velocity associated with big data is transforming how HRM is practiced in organizations. Businesses and consultancies that place a premium on evidence-based HRM practices are gathering and analyzing their own data, and are almost exclusively consuming their own research (e.g., Google; Dekas, Bauer, Welle, Kurkoski, & Sullivan, 2013). Empirical studies arising from practice settings (often conducted by practitioners, not academics) are considered to contain unique information and knowledge, constituting a major source of competitive advantage. It is little surprise then that most discoveries, inventions, and knowledge from the field are increasingly argued to be proprietary.

The wedge between science and practice in HRM has never been greater. In this paper, we argue that psychometric meta-analysis, when properly applied, is a cause for optimism. We first note the proliferation of studies in HRM and note the deleterious effect questionable research practices can have on HRM research. We then highlight the role that psychometric meta-analysis can, and must, play for building cumulative knowledge in our field, as well as the importance of approaching new developments with meta-analytic thinking. In the second half of this paper, we take up two issues that contemporary meta-analyses should carefully attend to, in order to ensure that they live up to their full potential: research inclusiveness and appropriate corrections for measurement error and range restriction. Psychometric meta-analysis is a constantly evolving research integration tool (Schmidt, 2008). Our goal is to provide guidance to future, new meta-analyses and updates to existing meta-analyses in HRM.

### 1.1. Proliferation of primary studies in HRM

Knowledge about and the prediction of work behavior depends on accurate assessment of the relationships between variables. With the ease of data collection, analysis, and sharing, our field is awash with empirical research. For example, using the search term “job satisfaction” yields 13,992 hits on Social Sciences Citation Index. The terms “leadership”, “personality and performance”, “teams”, “employment training”, and “goal setting” yield 42,357; 10,374; 51,627; 4023; and 2704 articles, respectively (search conducted January 26, 2016). With such a large body of studies, literature reviews of hypothesized relationships require a systematic, objective, and empirical approach to integrate research findings. Without meta-analyses, it is fast becoming impossible to draw generalizable conclusions from these and most other HRM literatures. Meta-analyses are essential as an objective summary tool.

As can be expected, with such voluminous research, conflicting findings are an inevitable consequence of sampling error and other statistical artifacts. That is, when multiple studies are reported, we find that there are conflicting findings for relationships under examination. Some studies report a statistically significant relationship whereas others report null findings—or even statistically significant findings in the opposite direction. We will not belabor the problems associated with statistical significance tests here (see Cohen, 1990, 1994; Guttman, 1985; Harlow, Mulaik, & Steiger, 1997; Kaplan, Bradley, Luchman, & Haynes, 2009; Kline, 2013; Lykken, 1968; Meehl, 1990; Morrison & Henkel, 2007; Nickerson, 2000; Rogers, 2010; Schmidt, 1996; Schwab & Starbuck, 2009; Ziliak & McCloskey, 2007, for excellent treatises) or the structural and institutional changes necessary to eradicate their misleading influence (Orlitzky, 2012), though we note that journal editors have started to institute policies that discourage, if not

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