Research in Industrial and Organizational Psychology From 1963 to 2007: Changes, Choices, and Trends

Wayne F. Cascio and Herman Aguinis
University of Colorado Denver

The authors conducted a content analysis of all articles published in the *Journal of Applied Psychology* and *Personnel Psychology* from January 1963 to May 2007 ($N = 5,780$) to identify the relative attention devoted to each of 15 broad topical areas and 50 more specific subareas in the field of industrial and organizational (I–O) psychology. Results revealed that (a) some areas have become more (or less) popular over time, whereas others have not changed much, and (b) there are some lagged relationships between important societal issues that involve people and work settings (i.e., human-capital trends) and I–O psychology research that addresses them. Also, much I–O psychology research does not address human-capital trends. Extrapolating results from the past 45 years to the next decade suggests that the field of I–O psychology is not likely to become more visible or more relevant to society at large or to achieve the lofty goals it has set for itself unless researchers, practitioners, universities, and professional organizations implement significant changes. In the aggregate, the changes address the broad challenge of how to narrow the academic–practitioner divide.

Keywords: I–O psychology, research in, future of, human-capital trends

Significant scientific advances in the field of and industrial and organizational (I–O) psychology are documented in detail in several available reviews (e.g., Anderson, Ones, Sinangil, & Visweswaran, 2001; Borman, Ilgen, & Klimoski, 2003; Dunnette & Hough, 1990, 1991, 1992; Rogelberg, 2007; Triandis, Dunnette, & Hough, 1994). Although scientific advances are important in areas central to the field, such as assessment, validation, motivation, leadership, performance appraisal, training, data-analytic techniques, and research methodology, one constant in the field has been its support of the scientist–practitioner model (Bass, 1974; Dunnette, 1990; Lapointe, 1990; McHenry, 2007; Murphy & Saal, 1990; Rupp & Beal, 2007).

Unfortunately, there are concerns with the effective implementation of the scientist–practitioner model because there is a serious disconnect between the knowledge that academics are producing and the knowledge that practitioners are consuming (McHenry, 2007; Rynes, Colbert, & Brown, 2002). As a result, many organizations fail to adopt the practices that I–O psychology research suggests are most effective (Dipboye, 2007), and the scientist–practitioner gap persists (Aguinis & Pierce, 2008; Anderson, 2007;

Cascio, 2007b, 2008; Gelade, 2006; Hodgkinson, 2006; Markides, 2007; Rynes, 2007; Rynes, Bartunek, & Daft, 2001), despite efforts to reduce it.

In light of these concerns, it seems reasonable to address questions such as the following: What type of knowledge, in terms of content, has I–O psychology produced and what is it currently producing? Does the knowledge produced by I–O psychology address important societal issues that involve people and work settings (i.e., human-capital trends)? Does I–O psychology produce research that is relevant to employees, their managers, broader stakeholders, and society at large and that informs human resource management (HRM) practitioners and other organizational decision makers?

For purposes of this article, we adopt Gelade's (2006) definition of practitioners, namely, those who make recommendations about the management or development of people in organizational settings or advise those who do. Research is relevant to the extent that it generates insights that practitioners find useful for understanding their own organizations and situations better than before (Vermeulen, 2007). In today's age of accountability and inadequate funding for research and universities in general, I–O psychology surely would benefit from producing knowledge that is seen as relevant and important by stakeholders outside of academic I–O psychology circles and even outside of the I–O psychology field in general (e.g., high-level university administrators, public policy-makers, members of the community at large).

At one level, it seems ironic even to be asking questions related to the broader relevance of I–O psychology research because the field, from its inception, was created to address, inform, and help solve important human-capital challenges (e.g., selection of soldiers to fill a wide variety of jobs in World Wars I and II). For example, consider the recent account of some of the classic applications of organizational psychology, along with rich detail about

the difficulties of practical implementation provided by Highhouse (2007). That same sense of mission is true today, as Rogelberg (2007, p. xxxv) noted, "In general the goals of I/O psychology are to better understand and optimize the effectiveness, health, and well-being of both individuals and organizations." Likewise, the mission statement of the Society for Industrial and Organizational Psychology (SIOP) is to enhance human well-being and performance in organizational and work settings by promoting the science, practice, and teaching of I–O psychology (SIOP, 2007).

In the present article, we offer a 45-year (1963–2007) content analysis and review of published research in I–O psychology in the two leading journals in the field: *Journal of Applied Psychology* (JAP) and *Personnel Psychology* (PPsych). Such an analysis and review affords us the opportunity to assess the extent to which the field of I–O psychology is producing research that addresses the questions mentioned above and, therefore, allows us to inform the important discussion of the extent to which the field is achieving its goals and fulfilling its mission.

Another purpose of this article is to determine whether the research literature in the field of I–O psychology, as well as two characteristics of those who generate it—geographic location (i.e., U.S. based vs. non-U.S. based) and affiliation (i.e., academic vs. nonacademic)—reflect patterns of stability and change. An increase in non-U.S.-based authors over time would suggest a trend toward the globalization of I–O psychology and also that the field is responding to the broader societal trend toward globalization. In addition, an increase in nonacademic authors would suggest a trend toward research that is more amenable to implementation, given that nonacademics often make decisions and plan interventions related to the topics their research addresses.

Previous reviews of the I–O psychology literature have been selective and have not addressed general content issues directly (Austin, Scherbaum, & Mahlman, 2002; Muchinsky, 1979; Strasser & Bateman, 1984). As a further step to locate any additional content analyses of the I–O psychology literature, we manually searched each of the 153 issues of JAP and each of the 109 issues PPsych from January 1980 to May 2007 for articles that described analyses of the content of published literature in the field. With the exceptions of the articles just cited, we found none. To our knowledge, therefore, our study is the first systematic assessment of the general content of published research articles in the field of I–O psychology covering more than four and one half decades, as reflected in the two leading journals in the field. The present article differs from previous reviews in that our focus is on topics, content areas, geographic location, author affiliations, and the correspondence between published research and human-capital trends rather than on methodology or other narrower aspects of the I–O psychology literature.

In sum, to answer the questions included above, we examined the topical areas investigated by each of the 5,780 articles published in JAP and PPsych from January 1963 to May 2007. This is the most extensive content analysis of the I–O psychology literature conducted to date. Our purposes are to (a) provide a description of topical areas that have received the most and least, as well as increased or decreased, attention over the past 45 years; (b) describe these results in light of important human-capital trends within each decade; (c) examine lagged relationships between published research and human-capital trends; and (d) discuss implications for the field of I–O psychology and propose strategies for narrowing the academic–practitioner divide, along with changes that can be made by researchers, universities, and professional organizations. Our hope is that such changes might improve human welfare in the workplace; inform debates over human-capital issues that are critical to employees, their managers, broader stakeholders, and society at large; and lead the field of I–O psychology closer to achieving the lofty goals it has set for itself.

Method

Overview and Background

We used content analysis, which is a method that converts qualitative material into quantitative material that subsequently can be analyzed subject to the limitations of nominal-level measurement (cf. Aguinis, Henle, & Ostroff, 2001; G. Shapiro & Markoff, 1997). More specifically, our data collection procedure consisted of manually coding every article published in every issue between January 1963 and May 2007 in JAP and PPsych on the basis of its content. In total, we coded 5,780 articles in the two journals ($n = 4,329$ for JAP and $n = 1,451$ for PPsych).

Why did we begin with the year 1963? Initially, the rationale was to cover a 30-year period, given that preliminary results of this research were presented by Wayne F. Cascio as part of his presidential address to SIOP in 1993. Although any starting point is arbitrary, our decision to code all articles over a 45-year period was based on the rationale that this is certainly long enough to identify trends reliably. On a related note, our 45-year time span included a sufficiently large number of editors. Specifically, our review includes the following editorial terms for JAP (based on the journal's masthead): Kenneth E. Clark (1961–1970), Edwin A. Fleishman (1971–1976), John P. Campbell (1977–1982), Robert M. Guion (1983–1988), Neal Schmitt (1989–1994), Philip Bobko (1995–1996), Kevin R. Murphy (1997–2002), and Sheldon Zedeck (2003–2007). It also includes the following editorial terms for PPsych (based on the journal's masthead): G. Frederic Kuder (1959–1963), John A. Hornaday (1964–1969), Frederic Kuder and John A. Hornaday (1970–1971), Frederic Kuder (1971–1974), Milton D. Hakel (1974–1984), Paul R. Sackett (1985–1990), Michael A. Campion (1991–1996), John R. Hollenbeck (1997–2002), and Ann Marie Ryan (2003–2007). Finally, there are also parallels at the individual level. The time period from 1963 to 2007 spans more than four decades, or roughly an entire professional career. Assuming a 5-year graduate training period, 45 years spans nine cohorts of new scholars in the field who contributed to the published literature and thus it is important to assess the aggregate nature of changes in that literature.

Content analysis is primarily a qualitative methodology, but, as noted above, it also includes a quantitative component, which provides an advantage over other more purely qualitative methods, such as literary interpretation and hermeneutics (Duriau, Reger, & Pfarrer, 2007). Content analysis methodology is especially suited for rigorous exploration of many important issues that are often difficult to study (Duriau et al., 2007). Also, it is particularly suited to answer the questions we posed in the introduction because, as noted by Duriau et al. (2007), content analysis (a) provides a replicable methodology to access deep collective values (i.e., topical areas that are of more [or less] interest in the field of I–O psychology), (b) is highly flexible (i.e., it allows us to categorize

articles into various topical areas in the field of I–O psychology), and (c) is nonintrusive (i.e., authors of the articles we coded did not participate actively in our research study).

Content Analysis Taxonomy

To provide a systematic basis for content coding each article, we developed a taxonomy that included 15 broad categories, which subsume 50 more specific ones. The final version of the taxonomy, which was used to code all the articles, is contained in the Appendix. Wayne F. Cascio developed the taxonomy in an iterative fashion. He began by identifying key themes, as reflected in I–O psychology textbooks that described the field. He then pilot tested several early versions of the taxonomy by content coding 4 years of journal articles published in JAP and PPsych, two early years (1965 and 1969) and two later years (1988 and 1991). The pilot test revealed the need for a more refined classification scheme to cover the broad range of topics that appeared in these two journals. The addition of the full range of 50 subcategories shown in the Appendix resulted in a content-coding scheme that provided complete coverage of all articles in the 4 years that comprised the pilot test. The taxonomy then was applied to all other years of published articles.

Like any other taxonomy that is created inductively, we cannot say unequivocally that this is the only possible taxonomy. We can say, however, that it is sufficiently comprehensive to classify each of the 5,780 articles included in our review. Also, it is important to note that the comparison of publication trends with broader human-capital trends involves the inevitable task of trying to map categories from one area onto the other. This can be challenging, especially when the terms used by academics and practitioners do not overlap, as we illustrate in the Discussion section with the particular case of talent management. Given the use of different terminology, and sometimes different meanings attached to the same terms, the exercise of trying to map one set of categories onto the other is challenging, regardless of the categories included in the taxonomies.

Geographic Location and Affiliation

We used the authors' bylines on the first page of each article to determine geographic location and affiliation. We defined academic as a university affiliation. We coded all other affiliations (e.g., government, corporation, consulting organization, applied research organization) as nonacademic. The rationale for including geography is that greater participation of non-U.S.-based authors would be an indicator of a trend toward globalization (note that we coded authors' geographic location irrespective of data collection location). The rationale for coding for affiliation is that, in our opinion, authors not affiliated with universities are, on average, more likely to conduct research that is amenable to implementation because they usually make decisions and plan interventions related to the topics of their research on a regular basis. At the same time, some internal I–O psychologists may have narrow views and see only what is of interest to their organizations. Geographic location and affiliation are less than perfect proxies, however, because there are U.S.-based authors who are aware of and concerned about global issues and academic authors who are aware of and concerned about the implementation of research findings in organiza-

tions. Despite their limitations, we examined these data as additional independent forms of evidence to answer the questions posed in the introduction.

Coding Process and Agreement Checks

Wayne F. Cascio coded articles in JAP and PPsych from 1963 to 1987, and a graduate student whom he trained, and who was naive to the purposes of the study, coded data from 1987 to 1992. As a check on interrater agreement, both individuals independently coded data from the year 1987. The Pearson correlation between the frequency counts tallied by the graduate student and Wayne F. Cascio for each of the 15 categories included in the Appendix was .88. Wayne F. Cascio also coded all articles in JAP from 2001 to 2003, all articles in PPsych from 2004 to 2006, and the first and third issues of JAP in 2007. A second I–O psychology graduate student, naive to the purposes of the study, coded the articles in JAP and PPsych from 1993 to 1997. Herman Aguinis coded all articles in PPsych for 1993–1994 and 1996–1997, all articles in JAP and PPsych for 1998–2000, all articles in PPsych for 2001–2003 and 2007 (first issue only, given that our review goes to May 2007), all articles in JAP from 2004 to 2006, and the second issue of JAP for 2007. We purposefully divided up the coding task this way, with different coders coding different journals over time, to minimize any potential systematic coding bias.

In cases where an article had a good fit with more than one category, we chose the category with the perceived best fit, which may have led to the potential underrepresentation of some areas. However, there is no reason to believe that this potential underrepresentation was systematic across articles or that it affected specific areas adversely. In other words, there is no evidence that the resulting relative rank order of areas is biased.

As an additional check on the replicability of the coding process, we computed correlation coefficients between the frequency counts tallied by the second graduate student and Herman Aguinis for each of the 15 categories included in the Appendix. Resulting correlations were .94 for 1993, .98 for 1994, .93 for 1996, and .92 for 1997. This high level of agreement was expected because the graduate student had completed all coursework toward a master's degree in I–O psychology and met several times with Wayne F. Cascio to discuss the nature of the coding task (i.e., participated in several coding training sessions) and Herman Aguinis is an experienced researcher in I–O psychology who has coauthored a widely used graduate-level I–O psychology textbook with Wayne F. Cascio (Cascio & Aguinis, 2005). Thus, each of the four coders had a common, shared understanding (i.e., a shared mental model) of the field of I–O psychology and how to categorize each article, which explains why the agreement among coders was so high.

Time Blocks

Although the coding of the articles was done year by year, we aggregated the results on the basis of 5-year time blocks, resulting in the following nine time periods: (a) 1963–1967, (b) 1968–1972, (c) 1973–1977, (d) 1978–1982, (e) 1983–1987, (f) 1988–1992, (g) 1993–1997, (h) 1998–2002, and (i) 2003–May 2007 (note that at the time of the writing of this article, only the first of the four issues of 2007 PPsych and the first three of the six issues of 2007 JAP were available and included in the analyses). Five-year time blocks are

arbitrary, but they represent a smoothing technique that is more likely to reveal underlying trends. As we noted earlier, they also generally represent a complete period of doctoral training. Examination of content categories on a yearly basis creates noise, or illusory trends, that tend to be clarified over longer time periods.

Results

We organize results into the following sections. First, we provide an analysis of trends regarding the 15 broad areas, including areas for which there is an upward trend, a downward trend, and no change. Second, we provide an analysis of trends regarding geographic location and affiliation. Third, we analyze trends regarding the 50 subcategories. Finally, we analyze the correspondence between published research in I–O psychology and major human-capital trends identified by decade.

Trends Regarding the 15 Broad Topical Areas

Tables 1 and 2 include results for the entire 45-year period for PPsych and JAP, respectively, for each of the 15 broad topical areas. Table 1 reveals that the top five topical areas (ranked from 1 to 5) published in PPsych from 1963 to 2007 are as follows (the first number in parentheses indicates the total number of articles for each topic, and the second number indicates the percentage of the 1,451 articles published on this topic over the entire 45-year period):

1. Methodology–psychometric issues (298; 20.54%),

2. Predictors of performance (284; 19.57%),

3. Work motivation and attitudes (179; 12.34%),

4. Performance measurement–work outcomes (161; 11.10%), and

5. Leader influences (103; 7.10%).

Table 2 reveals that the top five topical areas (ranked from 1 to 5) published in JAP from 1963 to 2007 differ only slightly from those above (the first number in parentheses indicates the total number of articles for each topic, and the second number indicates the percentage of the 4,329 articles published on this topic over the entire 45-year period):

1. Methodology–psychometric issues (940; 21.71%),

2. Work motivation and attitudes (688; 15.89%),

3. Predictors of performance (544; 12.57%),

4. Performance measurement–work outcomes (425; 9.82%), and

5. Human factors–applied experimental psychology (372; 8.59%).

To some extent, the minor difference between the two sets of top-ranked topical areas can be attributed to the fact that JAP publishes a broader range of articles, namely those that comprise

Table 1

Frequency Counts of Articles Based On Topical Areas For Personnel Psychology (1963–2007)

Topical area	1963–1967	1968–1972	1973–1977	1978–1982	1983–1987	1988–1992	1993–1997	1998–2002	2003–2007	Row total
Job analysis	6	3	5	22	12	9	2	5	4	68
Research methodology–psychometric issues	30	34	40	45	30	26	37	36	20	298
Predictors of performance	16	35	32	27	34	41	36	32	31	284
Performance measurement–work outcomes	19	16	20	33	23	9	18	14	9	161
Training and development	8	5	15	12	13	14	10	9	4	90
Industrial relations	7	5	0	4	4	7	1	0	0	28
Reward systems	5	4	4	3	12	8	4	4	2	46
Work motivation and attitudes	21	37	31	25	16	11	19	11	8	179
Leader influences	15	34	19	13	5	2	5	2	8	103
Work groups–teams	4	5	2	1	2	1	6	7	8	36
Career issues	3	17	5	5	2	4	2	9	8	55
Decision making	0	3	2	0	0	2	4	2	0	13
Human factors–applied experimental psychology	0	0	0	0	0	0	0	0	0	0
Consumer behavior	0	0	0	0	0	0	0	1	0	1
Societal issues	13	8	8	15	10	6	6	14	9	89
Column total	147	206	183	205	163	140	150	146	111	1,451

Table 2
Frequency Counts of Articles Based On Topical Areas For Journal of Applied Psychology (1963–2007)

Topical area	1963–1967	1968–1972	1973–1977	1978–1982	1983–1987	1988–1992	1993–1997	1998–2002	2003–2007	Row total
Job analysis	7	10	32	21	16	25	2	4	3	120
Research methodology–psychometric issues	99	77	107	87	85	119	212	120	34	940
Predictors of performance	59	62	103	55	50	52	28	65	70	544
Performance measurement–work outcomes	28	27	66	67	57	63	27	43	47	425
Training and development	30	12	21	17	14	18	16	9	15	152
Industrial relations	5	3	6	16	9	8	6	6	7	66
Reward systems	8	17	19	10	14	20	6	6	7	107
Work motivation and attitudes	53	73	118	69	75	78	31	73	118	688
Leader influences	14	24	51	38	20	16	18	28	31	240
Work groups–teams	9	13	12	5	8	11	5	20	38	121
Career issues	22	27	19	11	13	15	7	10	14	138
Decision making	10	15	21	14	18	20	12	18	24	152
Human factors–applied experimental psychology	74	76	67	55	34	32	8	20	6	372
Consumer behavior	7	19	34	6	7	7	5	3	7	95
Societal issues	5	13	27	14	15	12	17	30	36	169
Column total	430	468	703	485	435	496	400	455	457	4,329

the entire field of applied psychology, than does PPsych. In contrast, the convergence in the two sets of data over a 45-year period is remarkable, particularly given that our review covers eight editorial teams for JAP and nine editorial teams for PPsych. This convergence provides evidence that both journals serve as sound indicators of common underlying trends in the research produced in the field of I–O psychology. At the same time, overall counts may mask important underlying longitudinal trends. For example, in JAP, note how the number of articles published in the area of human factors–applied experimental psychology has decreased, especially since 1983. At the same time, note how the number of articles published in the area of work motivation and attitudes has cycled up and (not too far) down over the 45-year period, whereas those in the areas of predictors of performance and leader influences have remained relatively constant over time. The area of methodology–psychometric issues has remained unchallenged as the most popular topical area for most of the 45-year period, declining only in the past few years (yet still remaining one of the most popular areas).

With respect to PPsych, it published no articles on human factors–applied experimental psychology over the 45-year period, whereas the number of articles published in the top four areas (methodology–psychometric issues, predictors of performance, work motivation and attitudes, and performance measurement–work outcomes) remained relatively constant over each 5-year time block. In both PPsych and JAP, the number of articles published in the broad area of societal issues ranked seventh over the 45-year time period of the study.

At the bottom of the rankings in Table 1, in addition to zero articles in the area of human factors–applied experimental psychology, PPsych published relatively few articles in consumer behavior (1), decision making (13), industrial relations (28), work groups–teams (36), or reward systems (46). With respect to JAP (see Table 2), the five lowest ranked areas of emphasis over the 45-year period were industrial relations (66), consumer behavior (95), reward systems (107), job analysis (120), and work groups–teams (121).

Trends Regarding Authors' Geographic Location and Affiliation

Table 3 includes geographic location and affiliation information for PPsych and JAP. It is important to note that the total number of authors computed for a given period may be slightly different when this total is computed from different sources. Specifically, as noted in Table 3 regarding PPsych, the total number of authors for the period from 1983 to 1987 is 336 on the basis of adding the academic-status-based categories and 333 on the basis of adding the location-based categories. These minor differences, which have no impact on our substantive results or conclusions, are due to a highly reliable, yet less than perfect, coding process as described above (i.e., high correlations between counts produced by independent coders).

Results are clear cut for both journals. The modal author is an academic based in the United States. Although not even close to challenging the modal result, over time there is an increase in the number of authors from outside of the United States. One notable result is the steady decrease in the proportion of nonacademic authors, which reached a low of 4.67% for the most recent period

Table 3
Author Geographic Location and Affiliation Information (1963–2007)

Variable	1963–1967	1968–1972	1973–1977	1978–1982	1983–1987	1988–1992	1993–1997	1998–2002	2003–2007	*M (SD)*
				Personnel Psychology						
Academic affiliation	132	238	250	315	278	339	294	340	315	278 (65)
Nonacademic affiliation	93	85	68	90	58	65	54	85	42	71 (18)
U.S. location	216	296	299	406	320	330	328	382	297	319 (55)
Non-U.S. location	8	22	19	12	13	11	30	38	68	25 (19)
Academic authors (%)	58.75	72.27	76.69	75.42	82.66	93.91	81.37	80.31	86.94	78.70 (10)
U.S.-based authors (%)	96.14	89.88	91.72	97.21	95.14	91.41	90.77	90.24	81.97	91.61 (5)
				Journal of Applied Psychology						
Academic affiliation	497	638	1,126	955	853	987	1,007	1,167	1,231	940 (243)
Nonacademic affiliation	230	186	260	142	102	206	87	79	84	153 (69)
U.S. location	682	741	1,225	973	825	1,021	938	1,029	913	927 (164)
Non-U.S. location	42	95	161	124	130	172	157	206	346	159 (85)
Academic authors (%)	68.52	76.68	81.24	87.06	89.32	82.73	91.96	94.09	95.33	85.21 (9)
U.S.-based authors (%)	94.03	89.06	88.38	88.70	86.39	85.58	85.66	82.96	70.70	85.72 (6)

Note. Unless otherwise noted, values are frequency counts.

(2003–2007) for JAP and a higher, yet still relatively low, value of 13.96% for PPsych for the same time period.

Trends Regarding the 50 Subcategories Within Broad Topical Areas

Analysis at the level of the subcategory within each of the 15 broad topical areas revealed that the five most popular subcategories within JAP over the 45-year period of the study are the following (see Table 4):

1. Statistics–research methods (9%),

2. Human factors–applied experimental psychology (8.48%),

3. Job satisfaction–attitudes–involvement–commitment (6.3%),

4. Performance appraisal–feedback (6.21%), and

5. Psychometrics–testing issues (5.17%).

The same analysis of subcategories within broad topical areas for PPsych revealed the five most popular categories to be as follows (see Table 5):

1. Performance appraisal–feedback (7.82%),

2. Psychometrics–testing issues (5.41%),

3. Personnel selection–classification (4.85%),

4. Job satisfaction–attitudes–involvement–commitment (4.77%), and

5. Statistics–research methods (4.16%).

Perhaps the most striking result of this analysis is that JAP and PPsych shared four out of five of the most popular subcategories, out of a total of 50 possible categories, across the 45-year period of the study, once again indicating that both journals provide very consistent accounts of the relative attention given to various areas of research in the field of I–O psychology.

Linkage of Research in I–O Psychology to Human-Capital Trends

In light of the mission of the SIOP and the goals of the field of I–O psychology in general, it seems reasonable to ask whether most I–O psychology research addresses important human-capital trends. Table 6 summarizes, for each decade of our study (1963–1972, 1973–1982, 1983–1992, 1993–2002, and 2003–2007), the top five most popular areas published in JAP and PPsych, along with the top human-capital trends identified for that decade. To identify such trends within each decade, we conducted an exhaustive search of the broad literature in HRM, psychology, and related fields. Specifically, we identified the trends by conducting an electronic and manual literature review of proprietary databases as well as "Google Scholar" using the keywords *human resources*, *human capital*, and *trend*. The number of commentaries on these trends within each decade varied from a low of two sources (1963–1972) to a high of six sources (1983–1992), with a median of five sources per decade. We then content analyzed each source to extract the key human-capital trends discussed by the authors(s). Within each decade, we tabulated the top trends by frequency of mention. As Table 6 illustrates, these human-capital trends relate to the concerns of multiple stakeholders, including HR managers and general managers, as well as to the concerns of employees (e.g., work–life balance) and society at large (e.g., equal opportunity). With respect to evidence about the reliability and validity of our inferences, we approached this task by following the suggestions of Duriau et al. (2007), Landy (1986), and Scandura and Williams (2000). First, we attempted to follow best practices in conducting the content analysis of human-capital trends (Duriau et al., 2007). Second, we followed Landy's approach to validation as hypothesis testing. For example, we expected to find general

Table 4
Counts in Percentages Based on Subcategories for Journal of Applied Psychology (1963–2007)

Subcategory	1963–1967	1968–1972	1973–1977	1978–1982	1983–1987	1988–1992	1993–1997	1998–2002	2003–2007	M (SD)
Absenteeism, attendance, turnover, retention	1.16	1.92	2.70	4.33	5.75	3.63	3.25	2.86	1.75	3.04 (1.41)
Accidents: work, driving, home	0.93	0.43	0.57	0.21	0.23	0.40	0.25	0.44	1.09	0.51 (0.31)
Assessment centers	0.70	0.85	0.57	1.03	2.07	1.41	0.25	1.10	1.09	1.01 (0.52)
Behavior, prediction of processes, and outcomes	4.19	3.63	4.41	4.12	2.30	2.42	2.25	3.08	5.69	3.57 (1.16)
Biographical data	2.09	1.71	1.14	1.44	1.15	0.81	0.50	0.22	0.44	1.06 (0.62)
Careers–vocational choice–interests	5.12	5.77	2.70	2.27	2.53	2.62	0.50	1.54	0.88	2.66 (1.77)
Commentaries on I–O psychology as a field	0.00	0.85	0.14	0.21	0.23	0.60	2.25	0.44	0.66	0.60 (0.68)
Communication–counseling	0.23	0.64	0.85	0.00	0.46	0.00	0.00	0.22	0.00	0.27 (0.32)
Compensation–pay, benefits, incentives, equity, distributive justice	1.86	3.63	2.56	2.06	1.38	3.43	1.25	1.32	1.53	2.11 (0.91)
Consumer behavior–attitudes–perceptions	1.63	4.06	4.84	1.24	1.61	1.41	1.25	0.66	1.53	2.02 (1.42)
Criterion issues	2.09	1.28	0.71	0.41	0.46	1.61	1.00	0.00	0.44	0.89 (0.67)
Decision-making processes	0.93	0.85	1.99	1.65	3.68	3.23	2.75	3.30	4.38	2.53 (1.24)
Demographic changes	0.00	0.00	0.14	0.00	0.00	0.00	0.50	0.44	0.44	0.17 (0.22)
Differential validity–prediction	0.23	0.43	1.71	1.65	0.46	0.00	4.75	1.98	0.88	1.34 (1.46)
Disabilities	0.23	0.00	0.28	0.00	0.00	0.20	0.00	0.00	0.00	0.08 (0.12)
Equal employment opportunity	0.00	0.00	0.85	1.65	0.92	0.60	1.25	1.32	4.81	1.27 (1.44)
Ethical–privacy issues	0.00	0.00	0.00	0.82	0.69	0.40	0.25	0.44	0.22	0.31 (0.30)
Genetic screening	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 (0.00)
Human factors–applied experimental psychology	17.21	16.24	9.53	11.34	7.82	6.45	2.00	4.40	1.31	8.48 (5.70)
Innovation–creativity	1.40	1.71	0.57	0.82	0.00	0.60	0.25	0.44	0.44	0.69 (0.54)
International applications of I–O psychology	0.93	2.78	2.56	0.41	1.61	1.21	0.75	2.64	1.97	1.65 (0.88)
Interviews	1.16	2.78	2.84	2.27	2.30	1.81	1.75	2.86	1.09	2.10 (0.68)
Job analysis–job classification	1.63	0.64	1.85	2.47	1.38	2.82	0.25	0.00	0.44	1.28 (1.00)
Job design	0.00	1.28	1.71	1.24	1.84	2.22	0.00	0.44	0.22	0.99 (0.85)
Job evaluation–comparable worth	0.00	0.00	0.14	0.00	1.84	0.60	0.25	0.00	0.00	0.32 (0.61)
Job satisfaction–attitudes–involvement–commitment	7.91	7.69	5.55	4.95	5.06	3.83	3.50	6.37	11.82	6.30 (2.57)
Leadership	1.16	3.63	5.26	6.60	3.45	2.62	1.50	4.18	5.25	3.74 (1.80)
Legal implications of employment practices	0.00	0.00	0.00	0.00	0.23	0.00	1.50	1.76	0.44	0.44 (0.70)
Managerial behavior–performance–interests	2.09	1.50	1.99	1.24	1.15	0.60	3.00	1.98	1.53	1.68 (0.69)
Moderator variables	1.16	2.35	1.14	0.82	0.69	0.81	3.25	2.86	0.00	1.45 (1.10)
Motivation–goal setting	3.49	5.13	7.25	6.19	4.14	5.04	2.75	3.74	3.06	4.53 (1.50)
Organizational cultures, climates, policies, citizenship	0.23	1.50	1.28	0.82	1.61	2.42	1.25	3.30	7.22	2.18 (2.09)
Performance (work sample) tests	0.23	0.43	0.28	0.21	0.23	0.40	0.50	0.44	0.00	0.30 (0.16)
Performance appraisal–feedback	4.42	3.42	6.12	9.28	7.13	8.67	3.25	6.15	7.44	6.21 (2.17)
Personality assessment	3.72	0.85	2.84	0.82	0.92	1.61	0.00	3.74	4.60	2.12 (1.63)
Personnel selection–placement classification	1.16	1.71	1.85	0.21	0.46	1.01	1.75	1.98	0.88	1.27 (0.59)
Problem solving	0.00	0.64	0.43	0.41	0.92	0.20	0.00	0.22	0.44	0.31 (0.22)
Psychometrics–testing issues	8.37	5.77	3.13	3.92	4.14	6.25	9.00	4.84	1.09	5.17 (2.50)
Quality circles	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.03 (0.08)
Recruitment–initial screening	0.47	1.28	0.71	1.24	1.61	1.01	0.00	0.88	1.53	0.97 (0.52)
Statistics–research methods	6.98	3.63	6.40	5.57	6.44	7.26	28.00	12.75	3.94	9.00 (7.60)
Stress, burnout, role conflict, role ambiguity	0.00	0.21	1.00	1.65	5.29	3.83	0.25	2.42	3.06	1.97 (1.83)
Test validity–validation issues	4.19	1.92	1.14	4.74	3.91	4.84	3.25	3.08	0.44	3.06 (1.58)
Training, learning, organizational development, and change	6.98	2.56	2.99	3.51	3.22	3.63	4.00	1.98	3.28	3.57 (1.41)

Table 4 (*continued*)

Subcategory	1963–1967	1968–1972	1973–1977	1978–1982	1983–1987	1988–1992	1993–1997	1998–2002	2003–2007	M (SD)
Unions–industrial relations issues	1.16	0.64	0.85	3.30	2.07	1.61	1.50	1.32	1.53	1.55 (0.78)
Utility analysis	0.00	0.21	0.85	0.62	3.22	2.62	1.50	0.44	0.00	1.05 (1.17)
Work groups–teams	2.09	2.78	1.71	1.03	1.61	2.22	1.25	4.40	8.32	2.82 (2.29)
Work schedules	0.00	0.21	1.00	0.62	0.46	0.00	0.25	0.44	0.00	0.33 (0.34)
Work values	0.47	0.43	0.85	0.62	0.69	0.60	0.00	0.00	0.66	0.48 (0.30)
Work-family issues	0.00	0.00	0.00	0.00	0.46	0.40	1.25	0.66	2.19	0.55 (0.74)

Note. I–O = industrial and organizational.

agreement across sources, and we did. Third, we followed the advice of Scandura and Williams and triangulated our findings by examining multiple independent sources.

Like the comparison of key research themes that appeared in JAP and PPsych over the 45-year period of the review, there is also considerable overlap in key human-capital themes within decades. We do not elaborate these, however, because our purpose in this section is to examine the correspondence between key themes in published research and human-capital trends. Let us begin by focusing on lagged relationships, with the caveat that because we did not implement an experimental design, we cannot make inferences about causality (i.e., whether a particular human-capital trend did, in fact, cause a particular publication trend).

Given the time lag between the conduct of research and its appearance in the published literature, research that addresses within-decade trends might only appear in the following decade or even later. As an example, consider the emphasis on government accountability and legal compliance that began with the passage of the Equal Pay and Civil Rights Acts in the 1960s, along with subsequent government-issued guidelines for compliance, and has continued ever since. It is important to note how the areas of job analysis–job classification, personnel selection–placement–classification, and psychometrics–testing issues subsequently became dominant themes in JAP (1983–1992 and 1993–2002) and PPsych (1973–2007). Each of these areas plays an important role in legal compliance, and they suggest lagged relationships.

Some applied psychological research is indeed contemporaneous with human-capital trends. Consider the rise of participative management (1963–1972) and the widespread use of management by objectives (MBO; 1973–1982). Research on leadership (directly related to the use of participative management) was a popular theme in PPsych in 1963–1972 and also in 1973–1982. It was a key theme in JAP from 1973 to 1982. Not surprisingly, performance appraisal–feedback (closely related to MBO) was a key theme both in JAP and PPsych in 1973–1982 and in every time period subsequently. Perhaps this was driven also by the rise in 360° feedback, which began in 1983–1992.

Other trends show both contemporaneous and lagged effects. With respect to MBO (a major organizational trend in 1973–1982), motivation and goal setting (closely related to MBO; Aguinis, 2009) were key themes in JAP from 1983 to 1992. As another example, consider the role of job evaluation in the debate over comparable worth (1973–1982) and the demand for equal pay for equal work (1983–1992). Job analysis and classification (central to the use of job evaluation) were key themes in PPsych in 1973–1982 and also in 1983–1992. The category of compensation–pay, benefits, incentives, equity, distributive justice was a key theme in PPsych in 1983–1992.

Although a more fine-grained analysis of the correspondence between research in I–O psychology and human-capital trends within and across decades is available from us, because of space constraints, we address only one of them for illustrative purposes. That trend is talent management (see the final item in the list of 2003–2007 trends in Table 6). To be sure, the meaning of the term "talent management" sparks intense disagreement. As a recent article in *The Economist* noted,

> Indeed, companies do not even know how to define "talent," let alone how to manage it. Some use it to mean people like Aldous Huxley's

Table 5
Counts in Percentages Based on Subcategories for Personnel Psychology (1963–2007)

Subcategory	1963–1967	1968–1972	1973–1977	1978–1982	1983–1987	1988–1992	1993–1997	1998–2002	2003–2007	M (SD)
Absenteeism, attendance, turnover, retention	2.04	2.91	4.92	3.90	1.23	0.00	4.00	4.79	0.00	2.64 (1.92)
Accidents: work, driving, home	1.36	0.49	0.55	0.00	0.00	0.00	0.67	0.68	0.00	0.42 (0.47)
Assessment centers	0.00	0.97	3.83	0.98	2.45	5.00	3.33	4.79	1.80	2.57 (1.78)
Behavior, prediction of processes, and outcomes	2.04	0.49	0.00	1.95	3.68	2.14	2.00	0.68	9.01	2.44 (2.70)
Biographical data	0.00	2.43	1.64	0.49	1.23	1.43	3.33	1.37	0.90	1.42 (0.99)
Careers–vocational choice–interests	2.04	8.25	2.73	2.44	0.61	0.71	1.33	2.74	5.41	2.92 (2.46)
Commentaries on I–O psychology as a field	0.68	1.94	1.64	1.95	1.23	0.00	0.00	2.05	0.90	1.16 (0.81)
Communication–counseling	0.68	0.49	0.55	0.00	2.45	0.00	0.67	0.00	0.00	0.54 (0.78)
Compensation–pay, benefits, incentives, equity, distributive justice	3.40	1.94	2.19	1.46	5.52	5.00	2.67	2.74	1.80	2.97 (1.43)
Consumer behavior–attitudes–perceptions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.00	0.08 (0.23)
Criterion issues	2.72	1.94	1.09	0.98	0.61	6.43	0.67	0.00	1.80	1.80 (1.92)
Decision-making processes	0.00	1.46	0.00	0.00	0.00	0.00	2.00	0.68	0.00	0.46 (0.77)
Demographic changes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.00	0.08 (0.23)
Differential validity–prediction	0.00	2.91	4.37	2.93	1.23	0.00	0.00	0.68	0.00	1.35 (1.65)
Disabilities	0.00	0.00	0.00	0.00	0.00	0.71	0.00	0.00	0.90	0.18 (0.36)
Equal employment opportunity	3.40	0.00	2.19	1.95	0.61	0.00	0.67	3.42	4.50	1.86 (1.65)
Ethical–privacy issues	1.36	0.00	0.00	0.00	0.00	0.00	0.00	1.37	0.00	0.30 (0.60)
Genetic screening	0.00	0.00	0.00	0.00	0.61	0.00	0.00	0.00	0.00	0.07 (0.20)
Human factors–applied experimental psychology	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 (0.00)
Innovation–creativity	0.00	0.00	1.09	0.00	0.00	1.43	0.67	0.68	0.00	0.43 (0.56)
International applications of I–O psychology	4.08	3.88	2.19	2.44	1.23	1.43	2.00	2.74	2.70	2.25 (1.29)
Interviews	4.08	2.43	1.64	8.78	2.45	6.43	0.00	5.48	1.80	2.97 (2.01)
Job analysis–job classification	4.08	0.49	1.09	0.98	4.91	5.00	0.67	1.37	3.60	3.33 (2.73)
Job design	0.00	0.97	1.64	0.98	0.61	1.43	0.67	2.05	0.00	0.93 (0.70)
Job evaluation–comparable worth	0.00	0.00	0.00	0.00	1.84	0.71	0.00	0.00	0.00	0.28 (0.63)
Job satisfaction–attitudes–involvement–commitment	7.48	7.77	8.74	4.39	1.84	2.14	6.67	2.05	1.80	4.77 (2.91)
Leadership	5.44	10.19	6.56	4.39	2.45	1.43	0.67	0.68	3.60	3.94 (3.13)
Legal implications of employment practices	0.00	0.00	0.00	5.37	4.29	2.14	1.33	1.37	0.00	1.61 (2.00)
Managerial behavior–performance–interests	4.76	6.31	3.83	1.95	0.61	0.00	2.67	0.68	3.60	2.71 (2.11)
Moderator variables	0.00	0.00	0.00	3.90	0.00	0.00	0.67	0.68	0.00	0.58 (1.28)
Motivation–goal setting	4.76	6.31	4.92	3.41	1.84	0.00	1.33	0.00	0.00	2.51 (2.42)
Organizational cultures, climates, policies, citizenship	0.00	1.94	2.73	0.98	3.07	5.00	3.33	4.11	4.50	2.85 (1.65)
Performance (work sample) tests	0.00	0.97	2.19	0.49	0.00	0.71	1.33	0.68	2.70	1.01 (0.93)
Performance appraisal–feedback	9.52	4.37	5.46	12.20	12.88	6.43	7.33	4.11	8.11	7.82 (3.19)
Personality assessment	2.72	4.37	3.28	0.00	0.00	2.86	2.67	3.42	2.70	2.45 (1.49)
Personnel selection–placement classification	2.04	4.37	4.37	3.90	6.13	7.86	8.67	2.74	3.60	4.85 (2.25)
Problem solving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 (0.00)
Psychometrics–testing issues	10.88	3.40	4.37	3.41	3.07	2.86	6.00	7.53	7.21	5.41 (2.72)
Quality circles	0.00	0.00	0.00	0.00	1.23	0.00	0.00	0.00	0.00	0.14 (0.41)
Recruitment–initial screening	0.00	0.97	0.55	2.93	4.29	2.86	2.67	2.74	5.41	2.49 (1.75)
Statistics–research methods	0.00	2.91	4.92	3.90	4.29	4.29	7.33	8.90	0.90	4.16 (2.80)
Stress, burnout, role conflict, role ambiguity	0.00	0.00	0.00	2.93	0.61	0.71	0.00	1.37	0.00	0.62 (0.99)
Test validity–validation issues	6.12	3.40	5.46	4.39	5.52	2.86	6.00	4.79	7.21	5.08 (1.38)
Training, learning, organizational development, and change	5.44	2.43	8.20	5.85	7.98	10.00	6.67	6.16	3.60	6.26 (2.33)

Table 5 (*continued*)

Subcategory	1963–1967	1968–1972	1973–1977	1978–1982	1983–1987	1988–1992	1993–1997	1998–2002	2003–2007	M (SD)
Unions–industrial relations issues	4.76	2.43	0.00	1.95	2.45	5.00	0.67	0.00	0.00	1.92 (1.96)
Utility analysis	0.00	0.00	0.00	0.49	2.45	2.14	4.00	0.00	0.00	1.01 (1.49)
Work groups–teams	2.72	2.43	1.09	0.49	0.00	0.71	4.00	4.79	7.21	2.60 (2.37)
Work schedules	0.00	0.00	0.00	0.98	1.84	0.00	0.00	0.00	0.00	0.31 (0.66)
Work values	1.36	1.46	0.00	0.49	0.00	0.00	0.67	0.00	0.90	0.54 (0.59)
Work–family issues	0.00	0.00	0.00	0.00	0.61	2.14	0.00	3.42	1.80	0.89 (1.27)

Note. I–O = industrial and organizational.

alphas in "Brave New World,"—those at the top of the bell curve. Others employ it as a synonym for the entire workforce, a definition so broad as to be meaningless. ("The Battle for Brainpower," 2006, p. 2)

In the source from which we extracted this trend (Schwind, 2007), the area of talent management encompasses the subareas of recruitment, development, retention, HR effectiveness, and organizational demographics. A priori, one would expect research in I–O psychology to address this critical issue in a major way. To what extent does it do that?

As data reported in Tables 1 and 2 indicate, the record is decidedly mixed. On the one hand, the areas of staffing (predictors of performance) and performance measurement were ranked among the top five most popular areas in both JAP and PPsych from 1963 to 2007. On the other hand, if we look more specifically at the subarea of recruitment (see Tables 4 and 5), we found that for JAP, on average, across each of the nine 5-year time blocks, only 0.97% of articles addressed that topic and that from 2003 to 2007, the percentage was only 1.53 (see Table 4). PPsych did better; the comparable percentages of published articles on recruitment were 2.49% over all time blocks and 5.41% from 2003 to 2007.

With respect to the subarea of development, which, in our taxonomy, we term training, learning, organizational development, and change, the relative emphasis in both journals was somewhat better. We found that for JAP, on average, across each of the nine 5-year time blocks, 3.5% of articles addressed the topic of development but that from 2003 to 2007, the percentage dropped to 3.28. For PPsych, the comparable percentages were 6.26% over all time blocks, dropping to 3.26% from 2003 to 2007.

Next, consider the subarea of retention, which, in our taxonomy, falls in the category absenteeism, attendance, turnover, and retention. For JAP, on average, across each of our 5-year time blocks, 3% of articles addressed that topic but from 2003 to 2007, the percentage was only 1.75. For PPsych, the comparable percentages were 2.64% over all time blocks and 0% from 2003 to 2007. Retention is a critically important human-capital issue, not only because its obverse—employee turnover—is expensive but also in light of current and impending demographic changes in the workforce (Dychtwald, Erickson, & Morrison, 2006).

The next subarea within talent management, HR effectiveness, refers to the measurement of the HR function as a whole in terms of its ability to produce results relevant to an organization's overall talent agenda. Other than methodological critiques of the body of literature that relates HR activities to firm performance (e.g., Gerhart, Wright, McMahan, & Snell, 2000; Wall et al., 2004), studies in that area typically appear in journals other than JAP or PPsych (for more on this, see Cascio, 2007a).

The last subarea is organizational demographics. This encompasses more than just demographic diversity, as reflected in characteristics such as race–ethnicity, gender, and multigenerational representation. It also includes workforce planning because the impending retirement (or, in some cases, nonretirement) of the baby boom generation (those born between 1946 and 1964) has the potential to create a variety of HRM issues among all types of organizations (Lawler & O'Toole, 2006; Phillips, Pomerantz, & Gully, 2007). The average percentage of published articles on demographic changes was only 0.17 in JAP and 0.08 in PPsych.

Table 6
Most Popular Topical Areas Over Time

1963–1972	1973–1982	1983–1992	1993–2002	2003–2007
		Journal of Applied Psychology		
Human factors–applied experimental psychology	Human factors–applied experimental psychology	Performance appraisal–feedback	Statistics–research methods	Job satisfaction–attitudes–involvement–commitment
Job satisfaction–attitudes–involvement–commitment	Performance appraisal–feedback	Human factors–applied experimental psychology	Psychometrics–testing issues	Work groups–teams
Performance appraisal–feedback	Motivation–goal setting	Statistics–research methods	Job satisfaction–attitudes–involvement–commitment	Performance appraisal–feedback
Psychometrics–testing issues	Statistics–research methods	Psychometrics–testing issues	Performance appraisal–feedback	Organizational cultures, climates, policies, citizenship
Careers–vocational choice–interests	Leadership	Motivation–goal setting	Human factors–applied experimental psychology	Behavior, prediction of processes, and outcomes
Statistics–research methods				
		Personnel Psychology		
Leadership	Performance appraisal–feedback	Performance appraisal–feedback	Statistics–research methods	Behavior, prediction of processes, and outcomes
Job satisfaction–attitudes–involvement–commitment	Training, learning, organizational development, and change	Training, learning, organizational development, and change	Psychometrics–testing issues	Performance appraisal–feedback
Performance appraisal–feedback	Job satisfaction–attitudes–involvement–commitment	Personnel selection–placement classification	Training, learning, organizational development, and change	Psychometrics–testing issues
Psychometrics–testing issues	Leadership	Compensation–pay, benefits, incentives, equity, distributive justice	Performance appraisal–feedback	Test validity–validation issues
Careers–vocational choice–interests	Job analysis–job classification	Job analysis–job classification	Personnel selection–placement classification	Work groups–teams
		Human-capital trends		
Rise of participative management	Manpower planning	Women's movement, demands for equal pay for equal work; flexible work schedules; passage of the Americans With Disabilities Act	Growth in service and jobs in information technology; domestic and global mergers and acquisitions; large-scale downsizing and restructuring; multiple careers; need for retraining	Rise in health care costs, outsourcing, emphasis on leadership development
Passage of Equal Pay and Civil Rights Acts, plus similar executive orders	Compliance reviews, affirmative action plans	Beginning of downsizing, new technology leads to worker dislocation; calls for new approaches to motivation, training, and managing change	Telework, contingency workers, virtual teams, human support systems in the workplace (EEO, EAPs, safety, counseling, coaching)	Changes in executive compensation; compensation and benefits

Table 6 (*continued*)

1963–1972	1973–1982	1983–1992	1993–2002	2003–2007
Equal Employment Opportunity Commission guidelines for compliance	Role of job evaluation in comparable worth debate	Role of immigration in offsetting predicted labor shortages; employers as enforcers of immigration law (Immigration Reform and Control Act)	Increasing globalization, rise of E-commerce	Demand for work–life balance; retirement of large numbers of baby boomers
Increasing government intervention and court decisions affecting HRM	Widespread use of management by objectives	Full participation of baby boom cohort (born 1946–1964); two-gender workforce, quality of work life movement; transforming organizational cultures	Demographic diversity—aging of boomers, concern over age bias, training older workers, lessening influence of unions, fewer younger workers entering the workforce, more single parents	New attitudes toward aging and retirement; rise of identity theft; work intensification as employers try to increase productivity with fewer employees; vulnerability of technology to attack or disaster
Growing emphasis on legal compliance	Occupational Safety and Health Administration compliance	Some labor-management cooperation, union mergers, nonunion grievance procedures	Accelerating technological changes, emphasis on adaptability, continuous learning, strategic HRM, participative leadership, demands for work–life balance	Talent management, culture transformation, managing change, increasing diversity, globalization, and ethics and ethical leadership
	Union avoidance	Rise of strategic human resource planning, 360° feedback, global competition		

Note. Sources for human-capital trends from 1963 to 1972 are Losey (1998) and Patten (1973); from 1973 to 1982 are Losey (1998), Patten (1973), and Mills (1979); from 1983 to 1992 are Baird and Meshoulam (1986), Gorovitz (1983), Harris and Harris (1983), Rappaport (1988), Redwood (1990), and Skrzycki (1989); from 1993 to 2002 are Anfuso (1999), Bamber and Whitehouse (1992), Maiman (1998), Redwood (1990), and Wright and Rudolph (1994); and from 2003 to 2007 are Fay (2006), Schramm (2006), and Schwind (2007). EEO = equal employment opportunity; EAP = Employee Assistance Program; HRM = human resource management.

Discussion

We described the trends in publication over a 45-year period in the two leading journals in the field of I–O psychology, JAP and PPsych. There was remarkable convergence between the two journals in the rank order of the most popular broad topical areas. A more fine-grained analysis at the level of the subcategory within each of the 15 broad topical areas revealed close similarities in the rank order of the subcategories published in JAP and PPsych but also some differences in relative emphasis. Specifically, JAP tended to publish considerably more articles than PPsych in the areas of human factors–applied experimental psychology (although this area has decreased markedly in recent years) and statistics–research methods. The reverse was true with respect to personnel selection–classification; training, learning, organizational development, and change; and test validity–validation issues. In terms of geographic location and affiliation, most authors of articles published in JAP and PPsych were academics based in the United States. However, there is a steady increase in both journals in the number of authors from outside of the United States. Especially noteworthy (some might say alarming) is the steady decrease in the proportion of nonacademic authors publishing in both journals.

Summary of Comparison of Publication and Human-Capital Trends Over Time

It is important to note at the outset that I–O psychology is not HR and that there are numerous areas within the broad field of HR that fit human-capital trends but that generally lie outside the purview of I–O psychology. These include topics such as rising health care costs, identity theft, the role of immigration in offsetting predicted labor shortages, and the vulnerability of technology to attack or disaster. In a nutshell, we should not expect complete isomorphism between topics in I–O psychology research and human-capital trends. As Highhouse (2006) has noted, "We should not be a field that merely services organizational problems, and we should not allow research programs to be dictated by rapidly fluctuating economic conditions and management whims" (p. 205). We hasten to add, however, that many human-capital trends do fall within the purview of I–O psychology, and we would expect to see that researchers publishing in the top two journals in the field show an interest in them.

A rough scorecard reveals a 45-year record that is decidedly mixed. Whereas research in I–O psychology has addressed many within-decade human-capital issues, it has done so only modestly (and, in some cases, only indirectly), such as with talent management, work–life programs, diversity, globalization, ethics, and ethical leadership. Published research in the two leading journals of I–O psychology often (and in some cases, seriously) lags behind such trends.

The Disconnection to Practical Concerns

Our review showed that the vast majority of published I–O research is generated by academics. Palmer (2006) argued that a silent majority of academics advocate disinterest in practice to achieve scientific objectivity. Doing so ensures that their interests and values will not be subverted to those of management and that

they will not become mere servants of those in positions of power (Baritz, 1960). To the extent that this is true, however, then one can argue, as do Tushman and O'Reilly (2007), that this self-imposed distance from practical concerns reduces the quality of our field's research, undermines the external validity of our theories, and reduces the overall relevance of the data used to test ideas. Although there will always be a need for basic research that addresses important questions that may not be relevant to practitioners immediately (e.g., statistical, methodological, and psychometric research) or research that is stimulated by the simple desire to understand the psychology of people at work (Hulin, 2001; Rupp & Beal, 2007; Ryan, 2003), if the bulk of research in I–O psychology falls into that category, then the field will not have a major impact on public policy or on management practice. Although there is a spectrum of applied research, Murphy and Saal (1990) emphasized that the scientist–practitioner model discourages both practice that has no scientific basis and research that has no clear implications for practice. Using the scientific method to conduct actionable research is consistent with this position (Aguinis, 1993). As long ago as 1965, Guion argued that there is a false dualism between knowledge generation and "getting things done." He wrote, "while industrial psychology is indeed a professional field of practical endeavor, and while it does in fact offer much that is useful to managers and administrators, it is also a broadly significant body of knowledge that intrinsically deserves to grow" (Guion, 1965, p. 815). More recently, Zedeck and Goldstein (2000, p. 394) indicated that

> one of the implications of our adopting the scientist–practitioner model is that we are active in researching and resolving social issues and questions. In this regard, I/O psychologists should use the scientific method to develop research that is responsive to these issues and questions.

On the basis of our review, if we extrapolate past emphases in published research to the next 10 years, we are confronted with one compelling conclusion, namely, that I–O psychology will not be out front in influencing the debate on issues that are (or will be) of broad organizational and societal appeal. It will not produce a substantial body of research that will inform HR practitioners, senior managers, or outside stakeholders, such as funding agencies, public policymakers (including elected officials), or university administrators who control budgets. There is evidence indicating that most practitioners do not read JAP or PPsych on a regular basis (Rynes et al., 2002). We speculate that this may result from a perception of lack of relevance. If the published research is seen as relevant and useful, then there is a higher likelihood that practitioners will read it and that the research findings will affect their practices. After discussing some limitations of our study, our final section focuses on what we can do in the future to heighten the impact of I–O psychology research.

Limitations

In this section, we discuss four potential limitations of our study and its findings. First, the article examined only the quantity of articles published by topic, not their quality or direct impact on outcomes (e.g., whether they have affected organizational practices or policy decision making in a meaningful way). To be sure, a single seminal article produced by one team of researchers could

have tremendous impact, and our review would not capture that impact. In contrast, the quantity of articles published over time on a particular topic should reflect an underlying interest in a particular topic, including investment of time and resources in this topic, from the field in general. What we can say, however, is that if such research does not relate to issues of current or emerging importance in organizational and work settings, then by definition it cannot have impact and I–O psychology will be relegated to the status of a cottage industry.

A second, related potential limitation is that areas with high frequencies of published articles may not reflect relative interest because rejection rates could be higher in some areas than in others and also the quality of research may be different across areas. Both of these factors may combine to produce differential publication rates across areas. Although such an argument may be valid over relatively short periods of time, for example, during the tenure of a single editor, it is less valid over a long period of time and across the tenure of many different editors and reviewers (unless there is a change in the mission statement of a journal). In the case of JAP, the American Psychological Association has instructed the past few editors not to accept articles that deal with "clinical and applied experimental or human factors, for which there are more appropriate American Psychological Association journals" (American Psychological Association, 2007). This helps explain the drop in published articles in JAP on human factors after 1983.

A third potential limitation is that the relative frequencies of topics in JAP and PPsych may be affected by the launching of specialized journals. We examined several such journals (e.g., *Human Factors*, *Leadership Quarterly*, *Organizational Research Methods*), and our conclusion is that it is by no means clear that the launching of specialized journals has affected our main conclusions in a substantive way. For example, Tables 1 and 2 show that the decrease in interest in leadership dates to the late 1970s and early 1980s, although *Leadership Quarterly* was not launched until 1990. Hence, there is a possibility that the launching of specialized journals may have affected what is submitted and accepted by JAP and PPsych, but there is no clear evidence that the launching of these journals has affected our study's main conclusions.

Fourth, we examined only two journals in which researchers in I–O psychology publish. Perhaps academics publishing in practitioner-oriented journals are more likely to address issues that are related more closely to human-capital trends as compared with academics publishing in JAP and PPsych. Fortunately, that research has been done. Deadrick and Gibson (2007) content analyzed 20 years worth of articles published in two academic-oriented journals (JAP and PPsych) and two practitioner-oriented journals (*Human Resource Management* and *HRMagazine*). They found numerous large interest area gaps between HR professionals and academics, with the practitioner-oriented journals generally publishing articles that were more consistent with human-capital trends. Although academics tended to focus primarily on organizational behavior–motivation, job performance, and teams, practitioners published many more articles on compensation–rewards, strategic HR, technology, and international–global issues. The latter are more closely aligned with human-capital trends, as shown in our Table 6.

HRMagazine, which is a practitioner publication, includes a small minority of academic authors (about 6%) and a vast majority of practitioner readers (i.e., more than 80% of practitioners noted they "usually" or "always" read *HRMagazine*; Rynes et al., 2002). In contrast, in the present study, we found that a small minority of JAP and PPsych authors are nonacademics and the proportion of practitioner authors has decreased consistently over the years. Rynes et al. (2002) found that less than 1% of practitioners reported that they "usually" read JAP and PPsych. Moreover, a scale designed to measure how frequently respondents read each publication included the following anchors: 1 (*never*), 2 (*rarely*), 3 (*sometimes*), 4 (*usually*), and 5 (*always*). JAP received a mean rating of 1.19 and PPsych received a mean rating of 1.22. In general, therefore, academics tend to write in and read academic publications, and practitioners tend to write in and read practitioner publications.

Further evidence regarding the academic–practitioner divide comes from Saari (2007), who noted that practitioners usually look for research evidence only in response to a particular problem or need. In such cases, even if the information is there in journals, it requires considerable effort (and expertise) to find it, synthesize it, and sort out the disparate findings. Web sites are likely to be more effective repositories of evidence-based knowledge for practitioners (Cohen, 2007; Rousseau, 2007).

The HR research–practice gap, as demonstrated by Rynes et al. (2002) and later by Rynes, Giluk, and Brown (2007), suggests a deep division in professional orientation and the valuation of different sources of knowledge. This conclusion is not much consolation for the field of I–O psychology, but at least we are not alone. The need to narrow the divide between the academic and practitioner worlds is a challenge for I–O psychology and also for HR and other related fields as well (Bartunek, 2007; D. L. Shapiro, Kirkman, & Courtney, 2007). In short, even if a handful of I–O psychology researchers publish in journals more oriented toward practitioners, results of the present study suggest that mainstream I–O psychology research, as represented in its two most prominent journals, is not closely connected to current and emerging human-capital trends. The next questions we address are as follows: What are the implications of this schism, and what, if anything, should we do about it?

Toward the Future

In a recent interview (Barnett, 2007), management scholar William Starbuck described his view of the current state of research in management, which could just as easily describe the state of research in I–O psychology:

> People should do management research because they want to contribute to human welfare. Those who are professors of management are people of superior abilities and they should use these abilities for purposes greater than themselves. . .I also observe that many doctoral students and junior faculty are focusing on achieving social status and job security and are viewing research methods as tools to construct career success. Few of them seem apt to initiate or even to participate in significant reorientations. (Barnett, 2007, pp. 126–127)

Concerns about lack of relevance of the field and of narrow, self-serving orientations of many of its members, are certainly not unique to I–O psychology, as data from a recent online survey of members of the Academy of Management indicate (D. L. Shapiro et al., 2007). That study concluded that universities' promotion and tenure systems provide disincentives for conducting and publishing practitioner-oriented research.

Is the current, and perhaps future, trajectory of research in I–O psychology inevitable? We think not, but the necessary change in course is clear. Researchers can make conscious choices now to understand current and emerging human-capital issues more deeply, as well as the contextual constraints that managers face and the needs of organizational members, and to use their well-honed research skills to conduct research that addresses those trends and informs the debate over the relative merits of alternative positions (Zedeck & Goldstein, 2000). However, the changes needed are more than simply motivational. Certainly the incentive structure of academic research is unlikely to be altered substantially in the near future, which could be a big impediment for change, given that performance management systems can shape the culture and orientation of organizations and entire professions (Aguinis, 2009). More worrisome, however, are our results concerning the demise of the practitioner author and the disconnection from applied settings—both of which reduce opportunities for academics to bring their considerable research skills to bear in solving real organizational problems.

On the basis of his review of the literature in HRM, Dipboye (2007) concluded that HRM research is relevant only to academics and that there is a significant underutilization of research findings in organizations. He concluded that in addition to rigor, a successful scientific discipline must prove itself relevant to the society in which it is embedded. We agree, and in the next two sections, we propose several practical measures to narrow the academic–practitioner divide and to change the training and socialization of I–O psychologists.

Narrowing the Divide

Anderson (2007) argued that the perfectly natural divide between academics and practitioners is not necessarily harmful as long as sufficient bridging mechanisms exist. Survey results reported in D. L. Shapiro et al. (2007) suggested two boundary-spanning activities that might help narrow that divide. First, offer sabbaticals for academics in business practice, either as translators of research results or as researchers on a set of practitioner-oriented research issues. In the United Kingdom, for example, the Economic and Social Research Council systematically commissions journalists and other informed nonacademics to write accounts of research for policymakers and practitioners more generally (Wall, 2006). Second, offer more practitioner sabbaticals as executives-in-residence at universities or as fellows at research institutes in which they help shape and participate in research programs.

Anderson (2007) suggested many other bridging mechanisms, including becoming more strategically involved in senior managerial decision making by serving on boards of directors. Tushman and O'Reilly (2007) advocated greater participation by academics in executive-education contexts as a means to develop relationships with practitioners. More broadly, McHenry (2007) argued for a three-pronged approach to the science and practice of I–O psychology:

1. Work with issues that are important,

2. Measure outcomes that are important (at multiple levels of analysis), and

3. Share knowledge effectively.

With respect to sharing knowledge, Symon (2006) argued that one objective of published I–O psychology research should be to encourage practitioners to think differently. Toward that end, Gelade (2006) suggested that researchers frame their questions and hypotheses in terms that appeal to practitioner concerns as well as theoretical issues, that there be greater emphasis on practical implications in the discussion sections of published articles, that more articles include commentaries by peers (particularly valuable for examining claims and proposed solutions for which the evidence base is disputed or uncertain; Hodgkinson, 2006), and that greater use be made of the World Wide Web. Ed Locke (as reported by Rupp & Beal, 2007) proposed that one strategy for doing that is to implement a science–practice networking Web site, where researchers can learn about issues that practitioners are observing in the field and can find sites for conducting field experiments and where practitioners can read summaries and abstracts of current research being published in the journals.

Finally, results of our review suggest several research areas, and specific questions, that I–O psychology researchers could address to help narrow the academic–practice divide. The following is a nonexhaustive list of 13 such areas and questions.

1. Leadership development: How might an organization identify and develop ambidextrous leaders who can inspire and motivate both older and younger generations of workers? What approaches to training can help organizational members acquire these leadership skills?

2. Compensation and benefits: What are the impacts on motivation and performance of flexible approaches to total compensation? How do these approaches affect organizational culture and climate?

3. Executive compensation: How to close the trust gap that separates highly paid executives from lower paid workers?

4. Work–life issues: What do empirical data reveal about the impact of the full spectrum of flexible work policies on the ability to meet the needs of customers?

5. Retirements of baby boomers: What are the relative merits of alternative strategies for preserving institutional memory? What features of the work environment or the structure of work itself might make retirement less (or more) attractive than ongoing employment?

6. Attitudes toward aging: Can we identify alternative strategies for changing long-held, deeply ingrained attitudes toward older workers? Can we develop strategies to counter age grading in employment interviews and in performance reviews?

7. Work intensification: What are the health consequences (physical and mental) associated with "anorexic" organizations?

8. Talent management: In the quest to maximize performance, some argue that talent is most important; others

say that management systems enable ordinary people to do extraordinary things. Can I–O psychology disentangle the relative contributions of people and systems to effective performance?

9. Culture transformation: How do transformational processes differ in bottom-up versus top-down approaches to culture transformation? Can an existing senior-management team refloat the boat?

10. Managing change: How can we teach people to embrace change? What is the role of change management in the innovation process? How can leaders accelerate the change-management process?

11. Increasing diversity: How can we link the broad concept of diversity (e.g., of thought, of approaches to innovation and change, of orientation toward teamwork) to improved performance at the individual, team, and organizational levels?

12. Globalization: To what important outcomes is the construct of cultural intelligence related and not related? What are the most effective strategies for recruiting, selecting, and managing the performance of members of global virtual teams?

13. Ethics and ethical leadership: Given the realities of organizations, under what conditions is ethical (unethical) behavior most likely to occur? Under what conditions will employees and their leaders do the right thing even when no one is looking?

Addressing the above questions will require innovative research methodology as well as close collaboration between academics and practitioners in the process of designing studies and collecting data. This type of collaboration is related to what Bartunek (2007) labeled "a relational scholarship of integration." Thus, we emphasize that successfully narrowing the divide will require a joint effort on the part of academics and practitioners (McHenry, 2007; Rynes, 2007). For example, Rynes (2007) argued that much more research needs to be done to determine (a) why practitioners do not believe some of our findings as well as (b) why they do not implement them, even if they believe them.

Changes in the Socialization and Training of I–O Psychologists

Changes in graduate training and the socialization of new faculty members are also necessary. As we think about the conditions that are most likely to lead to research that has a genuine impact on practice, we are reminded of the excellent volume, *Making it Happen—Designing Research With Implementation in Mind* (Hakel, Sorcher, Beer, & Moses, 1982). Beginning the research journey with the end in mind focuses explicitly on application. It forces the researcher to confront difficult issues of research design when implementation of the findings is part of the research process. Eliciting academic researchers' assumptions and naive approaches to field-oriented research, and engaging them in active dialogue with others, especially practitioners or operating executives, around key strategic, tactical, and value issues, should be an integral aspect of graduate training in I–O psychology. Highhouse (2007) illustrated the dangers of attempting to apply findings from I–O psychology that are not grounded in the contextual constraints that define operating organizations.

At present, it is popular to train graduate students to recognize the importance of a variable in organizational research in terms of its psychometric characteristics (e.g., LeBreton, Hargis, Griepentrop, Oswald, & Ployhart, 2007). However, in modeling the effects of contextual factors that might contribute to the prediction of some organizational outcome, the input of practitioners or managers with first-hand experience and in-depth knowledge of an organization is, in our opinion, even more important if the research is to demonstrate ecological validity (accurately represent the pattern of relationships between employees and their organizational environments). One way to do that, as noted by Tushman and O'Reilly (2007) and Vermeulen (2007), is to use executive education or programs customized for a particular firm to create contexts where faculty and thoughtful practitioners might develop relations that spawn virtuous cycles of knowing (faculty and doctoral student research) and doing (linking scholarly research to real-world practice). How many generations of scholars in I–O psychology have been educated and trained without the benefit of that framework?

In the context of mentoring junior faculty members, it is important that senior faculty members encourage them to couple their research to practice and to think about the practical applications of their research. That means studying dependent variables that are of interest to decision makers and independent variables that can be changed by instituting new policies (Ruback & Innes, 1988). Junior faculty members who do research without implementation in mind risk becoming disconnected, and therefore out of touch, with the kinds of workplace issues that many of their own students face.

One important trend in the field of I–O psychology is the migration of researchers from psychology departments to business schools. For example, Aguinis (2003) tabulated the affiliation of academic members of the editorial boards of JAP and PPsych from 1977 to 2002. Results indicated that as of the early 1990s, there have been more editorial board members affiliated with business schools than psychology departments in both journals. In 1977, about 10% of JAP's editorial board members were affiliated with business schools, and by 2002, this figure had increased more than 50%. Similarly, in 1977, about 3% of PPsych's editorial-board members were in business schools, and this figure increased to about 50% by 2002.

Is it possible that the influx of I–O psychology researchers into business schools might help narrow the great divide between academics and practitioners? Perhaps, given that many business school faculty interact with business executives on a regular basis. As a result, they may be more aware of pressing human-capital trends and may subsequently conduct research on these topics. Unfortunately, the academic–practitioner divide documented in the field of HR, together with the fact that the reward structure for faculty in research-oriented business schools emphasizes the need to publish in traditional academic outlets, such as *Academy of Management Journal*, JAP, and PPsych, instead of practitioner-oriented outlets (McHenry, 2007), does not lead to an optimistic prediction. However, it may be too early to tell whether the

migration of I–O psychology researchers to business schools will narrow the academic–practice gap in the future.

What can professional organizations, such as SIOP, do? One simple step is to offer interactive sessions in which academics and practitioners can work together on important problems (see also Bartunek, 2007). SIOP's preconference workshops partially address this issue, but we advocate a much more focused effort. Rynes (2007) noted that this is probably the single most important thing that our professional associations can do to narrow the gap. Conversely, the largest association of HR professionals in the world, the Society for Human Resource Management, could incorporate more research-based content into its certification study guides and examinations, which thousands of practitioners take every year (Aguinis, Michaelis, & Jones, 2005; Cascio, 2007b).

In a 2007 SIOP symposium on the science–practice model, panelists argued for training graduate students

> to interface and communicate with other individuals at various hierarchical levels and with varying amounts of power and influence. These skills are needed to teach. These skills are needed to persuade organizations that research, consulting, or evidence-based HR systems are needed. These skills are needed to advocate on behalf of SIOP to inform the public about the purpose and importance of our field. (Rupp & Beal, 2007, p. 38)

The changes in course that we have described are not easy, and many may choose not to do so. That is unfortunate, because I–O psychology has the potential to provide the evidentiary foundation of solid research that can (a) improve human welfare in the workplace and (b) inform debates over human-capital issues that are critical to employees, their managers, broader stakeholders, and society at large.

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Appendix

Taxonomy Used to Classify Articles Appearing in the *Journal of Applied Psychology* and *Personnel Psychology* From 1963 to 2007

Job Analysis

  Jobs analysis–job classification
  Job design
  Work schedules

Research Methodology and Psychometric Issues

  Psychometrics–testing issues
  Statistics–research methods
  Moderator variables
  Test validity–validation issues
  Differential validity–prediction
  Utility analysis
  Criterion issues
  Commentaries on industrial–organizational psychology as a field

Predictors of Performance

  Assessment centers
  Biographical data
  Interviews
  Performance (work sample) tests
  Personality assessment
  Behavior, prediction of processes, and outcomes
  Genetic screening
  Personnel selection–placement classification
  Recruitment–initial screening

Performance Measurement and Work Outcomes

  Absenteeism, attendance, turnover, retention
  Accidents: work, driving, home
  Performance appraisal–feedback

Training and Development

  Training, learning, organizational development, and change

Industrial Relations

  Unions–industrial relations issues

Reward Systems

  Compensation–pay, benefits, incentives, equity, distributive justice
  Job evaluation–comparable worth

Work Motivation and Job Attitudes

  Job satisfaction–attitudes–involvement–commitment
  Motivation–goal setting
  Organizational cultures, climates, policies, citizenship
  Stress, burnout, role conflict, role ambiguity
  Work values
  Communication–counseling

Leader Influences

  Leadership
  Managerial behavior–performance–interests

Work Groups and Teams

  Quality circles
  Work groups–teams

Career Issues

  Careers–vocational choice–interests
  Work-family issues

Decision Making

  Decision-making processes
  Problem solving
  Innovation–creativity

Human Factors and Applied Experimental Psychology

Consumer Behavior

  Consumer behavior–attitudes–perceptions

Societal Issues

   Equal employment opportunity
   Ethical–privacy issues
   Legal implications of employment practices
   Disabilities
   Demographic changes
   International applications of industrial–organizational psychology

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