

A review of a decade's scholarly publications (2004–2013) in the *South African Journal of Industrial Psychology*

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Dates:

Received: 02 July 2014

Accepted: 26 Aug. 2014

Published: 25 Nov. 2014

How to cite this article:

Coetzee, M., & Van Zyl, L.E. (2014). A review of a decade's scholarly publications (2004–2013) in the *South African Journal of Industrial Psychology*. *SA Journal of Industrial Psychology/SA Tydskrif vir Bedryfsielkunde*, 40(1), Art. #1227, 16 pages.
<http://dx.doi.org/10.4102/sajip.v40i1.1227>

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Orientation: Publishing methodologically sound, empirically based studies in reputable accredited scientific journals are essential in order to advance knowledge and evidence-based practice in the field of industrial and organisational psychology.

Research purpose: The purpose of the research was to conduct a broad content analysis of the articles published in the *South African Journal of Industrial Psychology* (SAJIP) between 2004 and 2013. The study aimed to provide a descriptive overview of the most frequent content themes, published authors and institutions, research approaches, strategies, designs and analysis techniques, software packages and sample sizes in industrial and organisational (I-O) psychology utilised in the publications.

Motivation for study: The periodic analyses of published content in scholarly journals provide an index of the extent to which the publications reflect the scope of practice in a given discipline and broaden insight into the direction and relevance of research published in a journal.

Research design, approach and method: A broad systematic content analysis was conducted of 342 documented articles published in the SAJIP between 2004 and 2013. Descriptive data (frequencies and percentages) were used to report the findings.

Main findings: The publishing pattern of the SAJIP appeared to correspond with its focus and scope. Manuscripts utilising mostly cross-sectional quantitative correlational research designs with large samples ($n > 201$) were published in the SAJIP. The University of Johannesburg and Professor Sebastiaan (Ian) Rothmann were the largest contributors to publications between 2004 and 2013. Organisational psychology and psychometrics were the most prominent domains in I-O psychology research. Data were predominantly processed utilising SPSS.

Practical implications: The insights derived from the findings can be employed to plan future research initiatives in the field of I-O psychology.

Contribution/value-add: The findings provide valuable insight into the current status of the foci of I-O psychology research as published in the SAJIP between 2004 and 2013 and the contribution made by the SAJIP to advancing knowledge and evidence-based practice in I-O psychology.

Introduction

The *South African Journal of Industrial Psychology* (SAJIP) is a premier open-access, Southern-African, blind peer-reviewed journal that aims to advance scholarship and applied research in all areas of specialisation in the field of industrial and organisational (I-O) psychology. The focus and scope of the SAJIP, as the only I-O psychology publication in Africa, is to serve as a reputable accredited publication medium for scholars and practitioners who are interested in publishing original research of relevance and interest to the development of concepts pertaining to the success and performance of organisations, the effectiveness of leaders and teams and the well-being of people in the organisation (SAJIP, 2013; p. iii).

Publishing methodologically sound, empirically based studies are essential in order to advance knowledge and evidence-based practice in the field of industrial and organisational (I-O) or work psychology (Leong, Pearce & Huang, 2013). As an applied field of study, I-O psychology uses the psychological principles underpinning the field and the new knowledge and evidence-based solutions generated by research to address the critical challenges and issues that stem from the particular socio-economic contexts in which organisations are located (Arnold & Randall, 2010; Schreuder & Coetzee, 2010).

The current impact of the SAJIP on the field of I-O psychology in especially the Southern-African context is apparent, given its longevity since its establishment in 1974. The SAJIP has witnessed 40 years of existence and enjoys a current Global Impact Factor (GIF) of 3.66 which

indicates growth in national and international impact. The increase in the GIF led to heightened international exposure for the SAJIP, resulting in international recognition for its quality, scholarly impact and scientific contributions to the discipline (Coetzee & Van Zyl, 2013). However, I-O psychological research within Southern Africa, *post hoc ergo propter hoc*, the SAJIP, is not without its criticisms.

Van Zyl, Stander and Coetzee (2013) point out the on-going debate between academia and practitioners about whether I-O psychology research has practical applicability or relevance to the profession. Various researchers question the extent to which I-O psychology research is needs-driven and problem-focused (Moyo, 2012; Schreuder & Coetzee, 2010) as little academic research seems to focus on addressing imminent issues within South Africa (Moalusi, 2001; Pietersen, 2005). Therefore, it seems imperative to explore the current research trends, foci and publication scope of the SAJIP in order to critically evaluate these concerns.

Chaichanasakul *et al.* (2011) argue that a review of the articles or content published in a scholarly journal could assist in determining the overall quality of a journal, examine the development of a research area (trends and foci) and provide an objective historical report of the progress and growth of a field. Consequently, conducting a content analysis of the SAJIP is regarded as essential, given its prominence as an independent publication medium responsible for distributing information on theoretical, empirical and applied work carried out in the field of I-O or work psychology within the Southern-African context (Coetzee & Van Zyl, 2013). However, no such content analytic investigation has been conducted of the SAJIP during the past decade.

Research purpose and objectives

The purpose of the research was to conduct a broad content analysis of the articles published in the SAJIP between 2004 and 2013. The study aimed to provide a descriptive overview of the most frequent research-practice domains and content themes, published authors and institutions, research approaches, strategies, designs, analysis techniques, software packages and sample sizes of I-O psychology utilised in the publications.

The periodic analyses of published content in scholarly journals are deemed to be important because they provide an index of the extent to which the publications reflect the purpose, scope of practice, interests and values of a given discipline (Buboltz, Deemer & Hoffman, 2010; Pietersen, 2005; Raubenheimer, 1994; Whiston, Rose, Peterson III & Nguyen, 2013). The current review of the SAJIP content may further provide an opportunity to explore whether the publications correspond with the focus and scope of the SAJIP and to what extent scholars are producing research on I-O psychology that is current and relevant to practice. Identifying leading contributors (authors and research institutions) to the journal is also a common practice in journal content analyses (Whiston *et al.*, 2013)

that potentially serves the purpose of informing potential scholars in the I-O psychology field who are interested in the collaboration and/or extension of the work of top contributors to the field. In addition, a descriptive overview of the research approaches, strategies, designs and analysis techniques as well as software packages may provide an overview of the level of analytical sophistication of the research published in the SAJIP, which may be benchmarked against international Journals. Analysing the methodological characteristics of the publications may also provide guidance to scholars who are considering submitting manuscripts to the SAJIP.

Previous reviews of the SAJIP (see Pietersen, 2005; Raubenheimer, 1994) have been selective in their approach and did not address content-related matters directly. This study is the first to systematically identify and classify the general content of I-O psychology research published (2004–2013) in the SAJIP. This article therefore differs significantly from the reports of Raubenheimer (1994) and Pietersen (2005) on the SAJIP since the inception of the journal in 1975 as both provided either a reflective or philosophical overview of publications and publication dynamics: Raubenheimer (1994) for the period 1974–1994 and Pietersen (2005) for the period 1994–2004.

Literature review

Industrial and organisational psychology

I-O psychology as an applied sub-discipline of psychology is a field anchored in both the scholarly (scientific) and applied (practitioner) domains. Founded on a scientist-practitioner model, I-O psychology is concerned with the application of psychological principles, theory and research in the scientific study of human behaviour in work or organisational settings (Landy & Conte, 2004; Moyo, 2012; Riggio, 2009; Schreuder & Coetzee, 2010).

Scholars generally act as scientists who embrace the advancement of knowledge and evidence-based solutions through rigorous research across the various practice domains associated with the field of I-O psychology (Leong *et al.*, 2013; Schreuder & Coetzee, 2010). They may or may not be professionally trained and registered I-O psychologists. Practitioners in the field who officially operate in industry are generally professionally trained and registered psychologists who typically apply their knowledge to solve practical problems in the real world. They may or may not engage in research (Leong *et al.*, 2013). Research in I-O psychology ideally facilitates evidence-based techniques and solutions that can be applied by I-O practitioners who act as advisors and catalysts for business, industry and labour as well as public, academic and health organisations (Augustyn & Cillié, 2008; Landy & Conte, 2004). Research by Leong *et al.* (2013) also suggests a positive link between the scientist (scholar) and practitioner (applied) orientations of I-O psychologists, with both recognising the importance of using research in facilitating evidence-based practice in the work setting.

In light of the objectives of the present paper, the domains that the Health Professions Council of South Africa (HPCSA) determined for I-O psychology are of relevance to the SAJIP content analysis. The HPCSA serves as the regulatory body for health-care related professions within South Africa and was established in terms of the *Health Professions Act (No. 56 of 1974, 'the Act')* to protect the public and guide health-related professions (HPCSA, 2011). The HPCSA aims to determine standards for professional training and practice. The Professional Board of Psychology (PBP), a sub-division of the HPCSA, was established in terms of Regulation N. R1249 of the Act to implement the aforementioned mandate of the HPCSA within the field of psychology and to set standards of practice and training for I-O psychologists (briefly referred to as industrial psychologists) in South Africa (HPCSA, 2011; Pretorius, 2012). The HPCSA also regulates the scope of practice for industrial psychologists (see Box 1) which underpins professional training, practice and research within the field (HPCSA, 2011).

According to the HPCSA (2011), industrial psychologists practise in business or industrial settings with the general aim of directly benefiting the economic well-being of the organisation. I-O psychologists are concerned with the development and utilisation of psychological acts for the optimisation of individual, group, organisational and community functioning in relation to work contexts and environments (Benjamin & Louw-Potgieter, 2007; Van Zyl, Deacon & Rothmann, 2010). These psychological acts are applied to various domains within the organisational context, namely:

- recruitment and selection
- training, appraisal and review
- vocational guidance and career development
- industrial relations
- occupational health and safety
- planning technological and organisational change
- organisational behaviour
- ergonomics
- consumer behaviour
- employee well-being
- marketing (HPCSA, 2011).

These areas of expertise relate to specific research-practice domains in I-O psychology (HPCSA, 2011; Van Zyl *et al.*, 2010) which were used as a framework for analysing the content of the SAJIP publications.

The HPCSA (2008) differentiates industrial psychologists from other domains of psychological practice (e.g. clinical, counselling, educational and research psychology) as far as the application of psychological theories and paradigms in specialised areas of practice are concerned. These areas or domains include (1) career psychology, (2) coaching psychology, (3) consumer psychology, (4) employee well-being, (5) industrial-psychology practice, (6) labour relations, (7) organisational psychology, (8) personnel psychology, (9) psychometrics and (10) neuropsychology as applied to the work context.

Career psychology: focuses on providing models and psychological explanations for organisational, career-related phenomena such as the following:

- Individuals' career orientations, interests, motives and values.
- Person-environment congruence and job or career satisfaction.
- Work identity and identity at work, psychological career preoccupations relating to career or life stages and career development.
- Psychological factors that influence retention.
- Employability, job embeddedness, experiences of career well-being, career agency and adaptability, career counselling and guidance, early work history, occupational or organisational or job choice and career movements after organisational entry, work or family issues, career plateaus and retirement planning (Schreuder & Coetzee, 2010).

Although underrepresented in comparison to personnel psychology, organisational psychology and psychological assessment, Moyo (2012) and Schreuder and Coetzee (2010) noted a slight increase in career-related research from 2000. Career psychology overlaps with personnel psychology in terms of addressing the pressing needs of business and practitioners regarding talent management, development and retention, which makes research in this research-practice domain important (Coetzee & Schreuder, 2010).

Coaching psychology: relates to the systematic application of psychological theories, methodologies, paradigms and techniques to the optimisation of life experiences, work performance and individual or group or organisational well-being (Grant, 2006). Van Zyl and Stander (2013) relate coaching psychology to the optimisation of relatively normal functioning individuals, groups and organisations that do not present abnormal levels of psychological distress or psychopathology.

BOX 1: HPCSA scope of practice for I-O psychologists.

Scope:
Planning, developing and applying paradigms, theories, models, constructs, and principles of psychology in the workplace in order to understand, modify, and enhance individual, group, and organisational behaviour effectively.
Performing psychometric, and other assessments in order to determine the potential and/or suitability for training, development and employment and to determine individual, group, and organisational effectiveness; referring patients (clients) to appropriate professionals for assessment or intervention; designing, developing, standardising, and implementing assessment tools, and procedures related to the work environment.
Facilitating individual and group processes for effective organisational functioning; designing and implementing training programmes for effective organisational functioning; designing and developing strategies in consumer behaviour; developing interventions to ameliorate poor performance in work settings; designing and implementing programmes based on understanding ergonomics.
Advising on the development of policies, based on psychological theory and research; designing, managing, and evaluating industrial psychology intervention programmes.
Training and supervising other registered psychology practitioners in Industrial Psychology.
Conducting psychological practice and research in accordance with the Ethical Rules of Conduct for Practitioners registered under the Health Professions Act 1974; adhering to the scope of practice of Industrial Psychologists.

Source: *The Amended Regulations of the Health Professions Act 56 of 1974* published in the Government Notice Number R 263 of 6 April 2010

Note: HPCSA, Health Professions Council of South Africa; I-O psychologist, industrial and organisational psychologist.

Consumer psychology: refers to the study of psychological principles that influence consumer attitudes and motivation, buying habits and patterns, brand preferences, media research (including the effectiveness of advertisements and commercials) and the study of people's economic expectations (Schreuder & Coetzee, 2010). Moyo (2012) and Schreuder and Coetzee (2010) report consumer psychology to be one of the most under-represented research domains in comparison to the other domains of I-O psychology research-practice.

Employee well-being: is an area of applied psychology which relates to the development of sustained quality of employees' experiences and functioning within work contexts on a physical, emotional, psychological and social level (Rothmann, 2013; 2014). The presence of employee well-being is not defined merely by the absence of psychopathology or infirmity (World Health Organisation, 2008). Typical research themes include positive psychological and health-promoting constructs that explain the subjective work experiences of individuals in the work setting such as, for example, psychological capital, sense of coherence, self-efficacy, optimism, subjective well-being, life satisfaction, resilience, positive affectivity, emotional intelligence, work flow and flourishing, locus of control, coping, work engagement and hardiness. Job or work stress, job burnout and attitudinal variables related to downsizing, harassment, work-family pressures, outsourcing violation of psychological contracts and job insecurity are also important research themes (Schreuder & Coetzee, 2010). South-African based research revealed a notable increase in well-being studies after 2000 (Coetzee & Viviers, 2007; Moyo, 2012; Schreuder & Coetzee, 2010). Moyo (2012) also indicates employee wellness as an important current research issue for business and practice.

Industrial psychology practice: refers to specific work-related and practice-focused activities relating to the practitioner of I-O psychology. Aspects pertaining to practice management, ethics, training and development, continuous professional development and the like are included in this domain (HPCSA, 2008; Van Zyl *et al.*, 2010). Moyo (2012) indicated professional development, professional ethics and scope of practice (future fit) as important current research themes for scholars and practitioners.

Labour relations: relates to the psycho-social and behavioural dynamics associated with employee relations (Coetzee & Schreuder, 2010; Nicholson, 2005). This domain, also referred to as the psychology of labour relations (Nicholson, 2005), is concerned with the behavioural components associated with labour-relation practices rather than processes, policies and procedures (Bergh, 2013). Central themes in this domain pertain to understanding, from a psychological perspective, the following:

- dismissals and grievance handling
- deviant work behaviour
- diversity management
- intercultural communication and conflict
- employment issues relating to selection, psychological contract violation, promotion, remuneration, retrenchment or lay-offs

- the behavioural dynamics involved in the union-management cooperation processes such as trade-union membership
- industrial action such as strikes and negotiation
- dispute-resolution processes such as mediation (Bergh, 2013; Schreuder & Coetzee, 2010).

Moyo (2012) identified industrial relations as an important research domain of contemporary relevance for business and practitioners.

Organisational psychology: focuses on human behaviour at the organisational and group level. Typical research themes include leadership behaviour; organisational change and development; organisational behaviour, culture and climate; organisational, team and individual performance; group behaviour and dynamics; organisational structure and design; organisational diagnostics; organisational citizenship behaviour; organisational commitment; employee motivation, satisfaction and engagement and quality of work life (Schreuder & Coetzee, 2010). Moyo (2012) and Schreuder and Coetzee (2010) noted an increase in South-African based research in the organisational psychology domain since 2000. Leadership, organisational development, organisational culture, job attitudes and teams and groups were also identified as important contemporary research areas for business and practitioners (Moyo, 2012).

Personnel psychology: represents the overlap between psychology and human-resource management and involves the scientific study of individual differences and personality in work settings (Bergh, 2013). Typical research themes include job analysis and criterion development; psychological assessment, employee selection and placement; employee performance, reward and remuneration; employee training and development; attracting and retaining scarce and critical talent and adherence to employment-related legislation in hiring, promotion, placement, development and retention (Coetzee & Schreuder, 2010; Schreuder & Coetzee, 2010). Although Schreuder and Coetzee (2010) noted a decline in South-African based research on personnel psychology between 1990 and 2010, Moyo (2012) identified personnel psychology as the most frequently researched global category in I-O psychology during 2000 and 2011 with talent management, development and retention being topics of critical contemporary interest for especially organisations and practitioners in the field.

Psychometrics or psychological assessment in the I-O psychology context is closely related to all of the aforementioned domains in the sense that psychological assessment is relevant to employee, group and organisational development from the point of view of employee selection (Arnold & Randal, 2010; Benjamin & Louw-Potgieter, 2008; Van Zyl *et al.*, 2010). Theron (2007) regards measures and methodologies of psychometric assessment as the *tools of the trade* for I-O psychologists where the only limit of its use is the extent of the practitioner's creativity and competence. Typical research themes include the development and utilisation of various types of assessment instruments to

measure, predict, interpret and communicate distinguishing characteristics of individuals for a variety of work-related purposes such as selection (hiring, promotion, placement, job or career fit, retention), vocational guidance and career development, successful work performance and development and legislative issues regarding psychological assessment (Schreuder & Coetzee, 2010). Moyo (2012) and Schreuder and Coetzee (2010) identified psychological assessment, and especially personality assessment, as a frequent research domain for scholars and an important research issue for practitioners in the field of I-O psychology globally. Best-practice guidelines in psychological assessment, bias and fairness, internet-based testing, current debates and general trends in psychological assessment continue to be areas of importance for business and practitioners mostly because of technological developments in assessment practice, Employment Equity legislation and issues of diversity in the South African workplace (Moyo, 2012).

Neuropsychology is considered as a sub-discipline and specialisation area of general psychology (Anderson, Northam & Wrennall, 2014) with applications and utilisation in various fields (Postal, 2014). Although within the South African context, neuropsychology was initially considered a specialisation area (HPCSA PBP, 1999), it has recently been positioned as a separate scope of practice (HPCSA, 2011) with overlap and application in various fields. From an I-O psychology perspective, neuropsychology relates to the industrial psychologist who works at the nexus of the behavioural and neurosciences. The focus is on understanding how individual psychological phenomena in the work context arise from neurological processes (Byrne *et al.*, 2014). Typical research themes relate to the study of how neurological processes influence individual differences in tendencies towards positive emotions, behavioural approaches and vocational and job behaviour (Hansen, Sullivan & Luciana, 2011).

Each of the aforementioned sub-domains of I-O psychology is rooted in scientific research (Bergh, 2013) and has enjoyed the benefits associated with scientific refinement during the past four decades (Van Zyl, 2013b). Consequently, these domains have been established as integral to the training of I-O psychologists within South Africa (HPCSA, 2008). I-O psychologists are trained to be both scientists and practitioners in what is referred to as the Boulder Model (American Psychological Association [APA], 2007) or the 'scientist-practitioner model' (Hayes, Barlow & Nelson-Gray, 1999; Riggio, 2009). The professional training of I-O psychologists focuses on equipping students with the knowledge and skills to conduct research in an effort to increase knowledge and understanding of human-work behaviour and to apply that knowledge to improve work behaviour, the work environment and the psychological conditions of workers (APA, 2007; Byrne *et al.*, 2014; Riggio, 2009). In this regard, it stands to reason that scholarly publications in journals such as the SAJIP become important in informing the training of the I-O psychologist and advancing knowledge for evidence-based (empirical research-based) practice that addresses pressing contemporary business needs.

Research and analysis in I-O psychology

As noted above, I-O psychologists within South Africa are trained within the Boulder or 'science-practitioner' model (APA, 2007). As science-practitioners, I-O psychologists rely upon a variety of analysis methods that are fuelled by diverse sources of objective and subjective data in order to understand complex organisational phenomena (Rogelberg & Brooks-Laber, 2002). As such, I-O psychologists have to employ multifaceted analysis techniques (Ware & Johnson, 2013) to understand and predict human behaviour within individual, team and organisational contexts (Bergh, 2013). These analysis techniques take the form of theoretical (e.g. systematic literature reviews, meta-synthesis), quantitative (e.g. inferential statistics, structural equation modelling, hierarchical linear modelling, Bayesian analysis), qualitative (e.g. content analysis, psycho-ethnography) or mixed-method research approaches (e.g. embedded case studies).

Although these approaches are still prominent in mainstream industrial-psychology journals, research does suggest that there has been a shift in research method and approach preferences across the globe (Creswell, 2013a; Scandura & Williams, 2000). Creswell (2013a) indicates that global research has shifted from theoretical or basic research approaches towards more empirical methodologies (quantitative or qualitative) as a result of the strive towards adopting the 'scientific method' as a golden standard for research. Similar trends were found within SAJIP. Pietersen (2005) found that, between 1974 and 1993, 46% of the articles were theoretically inclined whereas 54% were empirical (both quantitative and qualitative). He further indicated that the balance shifted between 1994 and 2003 when 7% of articles were theoretical and 93% were empirical. This major shift implies a preference amongst South-African researchers to utilise empirical research methodologies and analysis techniques. Moyo (2012) also noted a preference for quantitative (hypothesis testing, statistical analysis) research methods in comparison to qualitative methods amongst scholars and practitioners in the field of I-O psychology, which may be a consequence of the science-practitioner model that forms the foundation of I-O psychology training.

Empirical-analysis techniques have become increasingly complex during the past four decades as the understanding of human behaviour and analysis methodology evolved (Schweigert, 2011). For example, for more than eight decades, inferential statistics (e.g. regressions, correlations) were considered the golden standard in understanding and predicting human behaviour (Howell, 2012). These techniques have been systematically replaced by more advanced analysis methods such as structural equation modelling, logistic linear regressions and hierarchical linear modelling (Kline, 2010).

Schweigert (2011) indicates that these so called 'advanced analysis techniques' have now become the norm within international psychology research and practice. In an international article almost two decades old, Kelloway

(1995) indicated that structural equation modelling (SEM) has replaced popular regression analysis in the prediction of human behaviour within various contexts. However, in a custom search done on SEM through PsychLib within the context of South African psychology, no articles utilising SEM were found for the period 1930 to 1998. The first article on SEM within the South African context was published in 1999. Similar results were found for other 'advanced statistical techniques' such as the Rasch Analysis (item response theory), hierarchical linear modelling and Bayesian analysis. By implication, it would seem that South-African psychology journals are slow in adapting to international research methodology, statistical analysis techniques and trends. As such, it would become increasingly difficult for South African journals and researchers to compete internationally. It is therefore imperative to investigate the current methodological and analysis orientation of articles published within the SAJIP in order to manage the potential impact of outdated methodologies on its global impact factor and future Web-of-Science listing.

Research design

Research approach

A qualitative content analytic (Duriau, Reger & Pfarrer, 2007) and descriptive research design (De Vos, Strydom, Fouche & Delpont, 2002; Salkind, 2012), drawing from the post-empiricism (or 'post-positivistic') paradigm (Zammito, 2004), was utilised in this study. Post-empiricism assumes that ideas, objects and knowledge are generated through investigation and that context is required to understand or interpret the researched reality whilst adhering to the principles of scientific rigour (Creswell, 2013b; Polgar & Thomas, 2013).

Research strategy

Content analysis was utilised in order to examine the publications within the South African Journal of Industrial Psychology between 2004 and 2013 (Aguinis, Henle & Ostroff, 2001; Salkind, 2012). Although content analysis is considered a qualitative analytical methodology, it does provide for quantitative clustering (Creswell, 2013a; Salkind, 2012; Van Zyl, 2013a) as an added advantage over purist qualitative approaches (Duriau *et al.*, 2007). This allows for qualitative material to be converted into quantitative data that can be analysed subject to the limitations of traditional nominal-oriented measurement (Salkind, 2012). This design is appropriate for use in this study as it is highly flexible, the results can be replicated, and it is non-intrusive (Duriau *et al.*, 2007).

Research method

Research setting and sampling method

In the context of the present study, only the articles published in the SAJIP between 2004 and 2013 in English and Afrikaans (inclusion criteria) were targeted to achieve the aim of the present study. These articles were analysed within the

context of the focus and scope of the SAJIP as outlined on the SAJIP website (<http://www.sajip.co.za>) and the spectrum of the field of I-O psychology (*see* HPCSA, 2011). SAJIP publications before and after the selected period (2004–2013) as well as editorials, introductions, book reviews, errata and notes during this time period were excluded (exclusion criteria), which resulted in a final data set of 342 articles.

Data-collection methods and recording

The SAJIP website was searched for publications between 2004 and 2013. Data were obtained through manually coding all articles that met the inclusion criteria, namely articles which were published between January 2004 and December 2013 in the South African Journal of Industrial Psychology. The time-frame (2004–2013) was selected as similar studies have been done by Raubenheimer (1994; 1975–1993) and Pietersen (2005; 1994–2003). In total, 342 articles were drawn and coded.

Initial data (article title, volume and issue number, name of first author, institutional affiliation and country of origin) were captured from the SAJIP website with the support of the SAJIP Title Co-ordinator on a Microsoft Excel[®] spreadsheet. Thereafter all articles were individually downloaded and reviewed in order to capture additional data (theme of I-O psychology research-practice domain; research approach, design and strategy; sample size; primary and secondary analysis techniques utilised and software packages used) and to ensure accuracy of recording. Where descriptive data were omitted in the original article, the primary or secondary author was emailed or phoned, and additional information was requested. The published articles were treated as the sources of data ($n = 342$), and the identified article statistics, first author biographic information, research methods, analysis techniques and I-O psychology research-practice domains and themes were treated as the data (frequency and percentage).

Data analysis procedure

Biographic information of first authors, article or publication statistics, research methods, software packages and analysis techniques was analysed through the use of frequencies and percentages calculated in Microsoft Excel. In some cases, more than one software package was reported within one article. In such cases, each software package was counted individually. Similarly, sample sizes utilised in each article were recorded and 'grouped' in accordance with the frequency of use across the 342 research articles. As suggested by Cascio and Aguinis (2008), the biographic information and author affiliation were determined through the use of the authors' by-lines. Because gender and race or ethnicity is not specified in the articles, authors' first and last names were utilised as indicators thereof (Elliott *et al.*, 2009; Fiscella & Fremont, 2006). The Bayesian Improved Surname Geocoding approach (BISG), developed by Elliott *et al.* (2009), was used to determine the race and gender of first authors. The research team's prior knowledge of the first authors was used as priors in the analysis, and results were presented as frequencies.

In order to determine the domains of I-O psychology research-practice and to identify the primary and secondary themes, content analysis was utilised. The content analysis was done by following best-practice guidelines outlined for broad systematic content analyses (Chaichanasakul *et al.*, 2011; Esterberg, 2002; Petticrew & Roberts, 2006; Whiston *et al.*, 2013). Building upon the guidelines of Duriau *et al.* (2007), a broad inductive coding taxonomy was developed. The coding taxonomy was based upon the HPCSA's research-practice domains for I-O psychology (HPCSA, 2008) as well as the research theme classification criteria of Coetzee and Schreuder (2010). The coding taxonomy was refined through discussion and consultation amongst the project team as well as amongst I-O psychology experts in the field. The final coding taxonomy was applied to all the articles that formed part of this study.

The coding taxonomy consisted of five main categories: (1) article statistics, (2) sampling sizes, (3) research methods, (4) analysis techniques and (5) HPCSA I-O psychology and sub-field research-practice domains with individual coding classifications which were captured on a Microsoft Excel spread sheet. Both the analysis techniques and I-O research-practice domains were clustered around primary and secondary themes. The primary themes are considered the predominant themes, and secondary themes are considered as ancillary. It should be noted that attempting to map and cluster research articles into a single category would in most circumstances be improbable. In various cases, different domains of I-O psychology research-practice overlap within a single article. As suggested by Cascio and Aguinis (2008), each article was clustered into primary and secondary research-domain themes to aid in the analysis. In this way, both the primary and secondary themes were integrated into the final analysis for congruence.

Strategies used to ensure data quality and integrity

In order to ensure the quality and integrity of the data, a clearly defined research objective and strategies for data collection and analysis were employed (Creswell, 2013a; 2013b). These strategies were guided by qualitative measures for quality assurance, namely conformability (Terre Blanche, Durrheim & Kelly, 2006), transferability (Creswell, 2013b), credibility (De Vos *et al.*, 2002) and trustworthiness (Gummesson, 2000). Best practices in analysis (Barnard & Fourie, 2007; Patton, 2002) were consistently applied throughout the process.

To further ensure data quality and integrity, the SAJIP 2004–2013 databases were systematically reviewed and synthesised by using a pre-established coding taxonomy as outlined in the data-analysis process. The coding taxonomy and classification criteria were tested with three senior I-O psychology researchers who (1) have extensively published within SAJIP (minimum of 8 articles), (2) are registered industrial psychologists with the HPCSA (minimum of 15 years) and (3) have published at least three articles on the discipline or profession or research-practice in I-O psychology. To increase the trustworthiness and credibility

of the coding process, open communication between the members of the research team continued throughout the entire coding process to address questions or issues regarding the coding. Disagreements in coding were discussed and were mostly related to the association between the primary and secondary research constructs or themes and the HPCSA's domains of I-O psychology research-practice. Further, expert opinions were sought where disagreements could not be resolved amongst the primary researchers in a satisfactory manner. The same criteria that were used to validate the coding taxonomy were applied to evaluate the experts' opinions. The average percentage of agreement between the two researchers involved in the coding process was approximately 85% which is higher than the suggested 70% overlap (Miles & Huberman, 1994). All data were retained for possible future scrutiny.

Reporting style

The findings of the descriptive and systematic content analysis are presented in line with the research objectives of the present research, namely to:

- Provide a general overview of the SAJIP publications in terms of number of issues and articles published, domains of I-O psychology practice-research most frequently reflected in the articles, most utilised research approach and most active research institution.
- Report the most frequently published authors and their institutions.
- Provide a summary of the frequencies and percentages of primary and secondary themes of I-O psychology content that were evident in the articles.
- Indicate the type of research methodology (approaches, strategies, designs and analysis techniques) and software packages most often used, as well as the sample sizes involved in the various studies.

Results

The findings of this paper are presented in three sections. Firstly, we provide a general overview of the SAJIP publications and most frequent contributing scholars, followed by a summary of the domains and themes of HPCSA I-O psychology research-practice. Thirdly, we provide an overview of the research approaches, analysis techniques, software packages and sample sizes that were used in the various publications.

General overview of the SAJIP publications, first-author biographic details and most frequent contributing scholars

Table 1 provides a general overview of the SAJIP publications in terms of number of issues and articles published per year, most utilised research approach, most frequent domain of HPCSA I-O psychology research-practice and research institutions best represented by the publications. The results showed that SAJIP published between 23 and 44 articles per

year ($\mu = 34$; $\sigma = 6.85\%$) between 2004 and 2013, with 2004 being the most fruitful year ($f = 44$; 12.87%). With the exclusion of 2007, 2008 and 2009, each year had one special edition ($M_0 = 1$) which was focused on a specific research theme of interest. Quantitative research ($f = 235$; 68.71%) approaches and domains related to organisational psychology ($f = 144$; 42.11%) were most prevalent during the sample period. The University of Johannesburg ($f = 103$; 30.12%) had the highest representation in the publications.

Table 2 indicates that the majority of the first authors were white ($f = 295$; 88.86%), South African ($f = 315$; 92.11%), female ($f = 173$; 52.11%) researchers from the University of Johannesburg ($f = 103$; 30.12%).

Table 3 shows that Professor Frans Cilliers (University of South Africa [UNISA]) was the most published first author ($f = 11$) and that Professor Sebastiaan (Ian) Rothmann (North West University [NWU]) was the most published scholar ($f = 36$) between 2004 and 2013.

Domains and themes of HPCSA I-O psychology research-practice

Table 4 provides an indication of how the data fitted into the domains of the HPCSA's I-O psychology. Organisational psychology ($f = 144$; 42.11%) and psychometrics ($f = 93$; 27.19%) were highly represented within this sample. Neuropsychology ($f = 1$; 0.29%) as an applied sub-discipline of I-O psychology, coaching psychology ($f = 5$; 1.46%) as well as labour relations ($f = 6$; 1.75%) and consumer psychology ($f = 6$; 1.75%) were underrepresented.

In terms of the domain themes of I-O psychology research-practice, Table 5 shows that the most common and frequently occurring primary and secondary themes in the SAJIP publications (2004–2013) were assessments, test development, psychometrics and selection techniques ($f = 132$; 19.3%), employee and organisational wellness ($f = 81$; 11.84%) and organisational development ($f = 42$; 6.14%). The most underrepresented themes were coaching and mentoring ($f = 2$; 0.44%), consumer behaviour, ($f = 9$; 1.32%) and group behaviour, dynamics and relations ($f = 13$; 1.90%).

Research approach, analysis techniques, software packages and sample sizes

Table 6 shows that the majority of the articles published during the time period used a quantitative ($f = 235$; 70.78%) approach with a cross-sectional research strategy ($f = 289$; 87.05%) and a correlational design ($f = 224$; 67.47%). These were predominantly analysed using the SPSS statistical analysis software program ($f = 211$; 89.41%).

Table 7 indicates that the majority of the articles published between 2004 and 2013 had sample sizes of between 501 and 1000 ($f = 37$; 21.21%).

Table 8 provides an overview of the primary and secondary qualitative-analysis techniques which were used during the sample period. The results of the primary and secondary analysis methods are combined to provide a more accurate indication of the applied techniques. The results indicate that the majority of the qualitative articles published made use of content analysis ($f = 48$; 39.34%) and thematic analysis ($f = 48$; 39.34%).

Table 9 provides an overview of the primary and secondary quantitative-analysis techniques which were used during the sample period. The results of the primary and secondary analysis methods are combined to provide a more accurate indication of the applied techniques. The results indicate that the majority of the quantitative articles made use of basic analytical techniques, namely correlations or regressions ($f = 134$; 28.51%), descriptive statistics ($f = 81$; 17.23%) and factor analysis ($f = 79$; 16.81%). However, structural equation modelling ($f = 56$; 11.91%), considered an advanced analysis technique, was used fourth most between 2004 and 2013.

Table 10 summarises the primary and secondary mixed-method analysis techniques which were used during the sample period. The results of the primary and secondary analysis methods are combined to provide a more accurate indication of the applied techniques. The results showed that the combination of descriptive statistics ($f = 3$; 21.43%) and thematic analysis ($f = 4$; 28.57%) were used for mixed-method research (see Table 10).

TABLE 1: General overview of SAJIP publications (2004–2013).

Year	Number of issues	Articles published	f (%)	Special editions	Most utilised research approach	Most frequent HPCSA I-O psychology domain	Research institution mostly represented
2004	4	44	12.87	1	Quantitative	Psychometrics	University of Johannesburg
2005	4	38	11.11	1	Quantitative	Organisational Psychology	University of Johannesburg
2006	4	42	12.28	1	Quantitative	Psychometrics	University of Johannesburg
2007	3	32	9.36	0	Quantitative	Psychometrics	University of Johannesburg
2008	3	27	7.89	0	Quantitative	Organisational Psychology	North-West University
2009	1	23	6.73	0	Quantitative	Organisational Psychology	North-West University
2010	2	37	10.82	1	Quantitative	Organisational Psychology	North-West University & University of Johannesburg
2011	2	27	7.89	1	Quantitative	Organisational Psychology	University of Johannesburg
2012	2	31	9.06	1	Quantitative	Organisational Psychology	University of South Africa
2013	2	41	11.99	1	Quantitative	Organisational Psychology	North-West University
TOTAL	27	342	100	7	-	-	-

f , frequency.

The primary and secondary basic-research analysis techniques which were used during the sample period are summarised in Table 11. The results of the primary and secondary analysis methods are combined to provide a more accurate indication of the applied techniques. The results showed that literature reviews ($f = 35$; 48.87%) and systematic reviews ($f = 34$; 43.59%) were predominantly used for basic research during the sample time frame.

Discussion

The study aimed to provide a descriptive overview of the most frequent domains and content themes, published authors and institutions, research approaches, strategies,

designs and analysis techniques, software packages and sample sizes of I-O psychology research-practice utilised in the SAJIP publications between 2004 and 2013.

Research trends and benchmarking

Overall, the results showed that the SAJIP published 342 articles (23–44 per annum) during the past decade (2004–2013). The major contributors to SAJIP during this period were white male academics from South-African tertiary education institutions. Leading contributors during this period were the University of Johannesburg and Prof Sebastiaan (Ian) Rothmann from the North-West University's Optentia Research Programme. The empirical studies were mostly

TABLE 2: Characteristics of first authors ($n = 342$)

Item	Category	<i>f</i>	%
Gender	Male	168	50.60
	Female	173	52.11
	Unknown	1	0.30
Race	Black	24	7.23
	Coloured	3	0.90
	Indian	20	6.02
	White	295	88.86
Country of origin	Australia	2	0.58
	Belgium	4	1.17
	Canada	1	0.29
	Ghana	1	0.29
	Italy	1	0.29
	Nigeria	1	0.29
	South Africa	315	92.11
	Sweden	2	0.58
	Sweden	1	0.29
	Switzerland	1	0.29
	The Netherlands	8	2.34
	Uganda	1	0.29
	United States	4	1.17
Institutional affiliation	International institutions	27	7.89
	National private and public institutions	13	3.80
	Mangosuthu Technikon	1	0.29
	Nelson Mandela Metropolitan University	6	1.75
	North-West University	59	17.25
	Tshwane University of Technology	5	1.46
	University of Cape Town	6	1.75
	University of Fort Hare	1	0.29
	University of Johannesburg	103	30.12
	University of Kwa-Zulu Natal	7	2.05
	University of Limpopo	3	0.88
	University of Pretoria	14	4.09
	University of South Africa	58	16.96
	University of Stellenbosch	25	7.31
	University of the Free State	8	2.34
	University of the Witwatersrand	4	1.17
	University of Venda	1	0.29
Vaal University of Technology	1	0.29	

f, frequency.

TABLE 3: Most published scholars.

Rank	Most published first author		Most published scholar	
	Author	Number of published manuscripts as first author	Author	Total number of published manuscripts
1	Professor Frans Cilliers (UNISA)	11	Professor Sebastiaan (Ian) Rothmann (NWU)	31
2	Professor Johann M. Schepers (UJ)	9	Professor Frans Cilliers (UNISA)	24
3	Professor Sebastiaan (Ian) Rothmann (NWU)	9	Professor Gert Roodt (UJ)	26
4	Professor Melinde Coetzee (UNISA)	6	Professor Johann M. Schepers (UJ)	18
5	Professor Gideon P De Bruin (UJ)	5	Professor Freddie Crous (UJ)	16

UNISA, University of South Africa; NWU, North West University; UJ, University of Johannesburg.

cross-sectional quantitative studies with a correlational design, utilising various editions of SPSS to process the data. Sample sizes varied significantly during this period, ranging from small (1–499) to very large (500–20 000). Qualitative research dominated in 2012 as a result of a special edition on system psychodynamics. Although research contributions were mostly in organisational psychology, psychological assessment (psychometrics) showed the second highest publication frequency. Employee well-being had the third highest publication frequency. The findings corroborate both national (Moyo, 2012; Schreuder & Coetzee, 2010) and international (Casio & Aguinis, 2008) research findings on dominant research trends in I-O psychology.

The observed publishing pattern concerning research-practice domains of the SAJIP during the period 2004 to 2013 could be attributed to the journal's focus and scope that is focused on serving as a:

... publication medium for scholars and practitioners who are interested in publishing original research of relevance and interest to the development of concepts pertaining to the success and performance of organisations, the effectiveness of leaders and teams, and the well-being of people in the organisation (SAJIP, 2013; p. iii).

This focus and scope of the SAJIP also appears to be of contemporary relevance to the traditional domains of I-O psychology research-practice. Scholars and practitioners in the field of I-O psychology emphasise the importance of continued research on these themes in the light of increasing concerns regarding the impact of changes in the world of work (Moyo, 2012; Rothmann & Cilliers, 2007; Schreuder & Coetzee, 2010). In this regard, the findings appear to confirm the SAJIP's contribution to advancing relevant inquiry into traditional research and practice domains in I-O psychology.

The HPCSA's scope of practice for industrial psychologists (see Box 1) also emphasises psychometrics or psychological assessment and organisational psychology as important practice areas. Themes relating to research in organisational psychology were found to be important as it provides methodologies and mechanisms to aid businesses and practitioners (Moyo, 2012). Understanding organisational behaviour and dynamics is at the core of I-O psychology (Cascio & Aguinis, 2008; Schreuder & Coetzee, 2010), and publications in this area should continue to grow in line with the associated refinement in research aimed at predicting and understanding human behaviour (Cascio & Aguinis, 2008).

The noted predominance of test development, psychometrics and selection techniques corroborate observations by Landy and Conte (2004) and Schreuder and Coetzee (2010) that understanding personality and individual behavioural characteristics will continue to be of importance in advancing knowledge about and predicting work behaviour in multi-cultural societies and workplaces. Psychological assessment will continue to be of interest to both international (Cascio & Aguinis, 2008; Landy & Conte, 2004) and South African scholars and practitioners (Benjamin & Louw-Potgieter,

TABLE 4: HPCSA's domains of I-O psychology.

HPCSA's domain of I-O psychology	<i>f</i>	%
Career psychology	13	3.80
Coaching psychology	5	1.46
Consumer psychology	6	1.75
Employee well-being	52	15.20
Industrial psychology: Practice	12	3.51
Labour relations	6	1.75
Organisational psychology	144	42.11
Personnel psychology	10	2.92
Psychometrics	93	27.19
Neuropsychology	1	0.29

HPCSA, Health Professions Council of South Africa; I-O, industrial and organisational.

TABLE 5: Frequencies and percentages of primary and secondary content themes in Industrial and Organisational Psychology research-practice (2004–2013).

Summary of themes	Primary theme (<i>f</i>)	Primary theme (%)	Secondary theme (<i>f</i>)	Secondary analysis theme (%)	Total (primary & secondary themes) (<i>f</i>)	Total (%)
Assessments, test development, psychometrics and selection techniques	62	18.13	70	20.47	132	19.30
Coaching and mentoring	2	0.58	1	0.29	3	0.44
Careers and career development	9	2.63	8	2.34	17	2.49
Consumer behaviour	6	1.75	3	0.88	9	1.32
Deviant work behaviour, integrity and ethics	7	2.05	8	2.34	15	2.19
Diversity management	13	3.80	14	4.09	27	3.95
Emotional intelligence and emotions at work	19	5.56	37	10.82	56	8.19
Employee and organisational wellness	38	11.11	43	12.57	81	11.84
Group behaviour, dynamics and relations	6	1.75	7	2.05	13	1.90
Individual and organisational performance	4	1.17	14	4.09	18	2.63
Industrial psychology: Practice	8	2.34	6	1.75	14	2.05
Leadership	9	2.63	6	1.75	15	2.19
Organisational behaviour	46	13.45	48	14.04	94	13.74
Organisational development	17	4.97	25	7.31	42	6.14
Personality at work	19	5.56	7	2.05	26	3.80
Positive psychology and psychofortology	28	8.19	5	1.46	33	4.82
Research methodology and technique's	17	4.97	6	1.75	23	3.36
Strategic human resource management	9	2.63	11	3.22	20	2.92
Systems psychodynamics	25	6.73	4	1.17	27	3.95
Not Applicable	-	-	19	5.56	19	2.78

Note: number of articles (*n*) = 342. HPCSA, Health Professions Council of South Africa; IOP: Industrial and Organisational Psychology. Themes listed alphabetically.

2007; Moyo, 2012) as a result of various contextual changes and challenges (Schreuder & Coetzee, 2010). The HPCSA's proposed re-classification of psychometric instruments, legislative amendments and the continuing endeavours regulating the development and control of psychometric instruments within South Africa will most probably continue to stimulate research interest in the field of psychometrics.

Although organisational psychology, psychometrics or psychological assessment and employee well-being dominated the research themes, all of the HPCSA's domains of I-O psychology research-practice were well represented with the exception of neuropsychology. The underrepresentation of themes relating to neuropsychology could be because interest in exploring psychological constructs associated with the traditional domains of I-O psychology research-practice from a neurobiological perspective has only recently started to receive attention (Hansen *et al.*, 2011). Further, it may also be attributable to the lack of formal academic training and content-related competence of South African scholars in this field of neuroscience. None of the major universities within South Africa's I-O psychology departments appear

to (at the time of writing this article) present formal academic qualifications in neuropsychology (for registration purposes with the HPCSA). Academic qualifications are usually developed around researcher or lecturer competence, in line with industry needs, and they stimulate research opportunities through post-graduate students' research projects. The lack of formal qualifications in the field may therefore contribute to the underrepresentation of neuropsychology publications in SAJIP.

Similarly, the under-representation of personnel psychology contributions to the SAJIP could be attributable to the establishment of the *South African Journal of Human Resource Management* (SAJHRM) in 2003. Personnel psychology is traditionally associated with human resource management processes and practices (Cascio & Aguinis, 2008; Schreuder & Coetzee, 2010), and the establishment of the SAJHRM could have drawn publication interest in this field away from the SAJIP. Journals of human-resource management across the globe are attracting more personnel psychology research as traditional I-O psychology journals are in high demand and the waiting list for publications have exponentially increased (Cascio & Aguinis, 2008). Further, the national and international decline in personnel psychology research is proportional to the increased interest in organisational psychology and well-being research (Schreuder & Coetzee, 2010).

Although the traditional domains of I-O psychology (organisational psychology, psychometrics and employee well-being) are well represented within the SAJIP, emergent research-practice domains are not represented. No articles could be found relating to emergent research-practice domains such as behavioural economics, quantum-decision sciences, forensic psychology, psychogerontology, traffic psychology, virtualisation, cybersecurity, psychoneuroimmunology, investor psychology, behavioural finance or behavioural game theory (and the like) within SAJIP. Therefore, it would seem that the SAJIP, and by implication I-O psychology within Southern Africa, may have become vested in cyclical traditionalism. Addressing research questions in these emergent domains will require innovative research methodologies as well as collaboration between academics (in different disciplines) and practitioners.

Research methods and design

In terms of research methodology, the preference for cross-sectional quantitative empirical studies and analysis techniques corroborate Moyo's (2012) observation that scholars and practitioners in I-O psychology appear to prefer quantitative (hypothesis testing, statistical analysis) research methods in comparison to qualitative methods. This trend may be a consequence of the science-practitioner model that forms the foundation of I-O psychology training. The increased use of quantitative research designs may also be used as a defence against the critique from the natural sciences that psychology should not be considered a 'true science' (Pind, 2014; Stier, 2014) because it is 'unable to produce hard facts' which is replicable in most environments (Rowley & Dalgarno, 2010,

TABLE 6: Research methodology and software packages.

Item	Category	f	%
Research approach	Basic research	39	11.75
	Mixed-methods	7	2.11
	Quantitative	235	70.78
	Qualitative	61	18.37
Race	Auto-ethnography	2	0.60
	Case-study	3	0.90
	Cross-sectional	289	87.05
	Longitudinal	9	2.71
	Historical	1	0.30
	Ex post facto	1	0.30
	Scholarly commentary	2	0.60
	Not applicable or unknown	35	10.54
Research design	Case study	2	0.60
	Correlational	224	67.47
	Correlational/phenomenology	6	1.81
	Descriptive	6	1.81
	Embedded case-study	2	0.60
	Ethnography and auto-ethnography	2	0.60
	Grounded theory	13	3.92
	Historical	1	0.30
	N/A or unknown	4	1.20
	Phenomenology	44	13.25
	Pre-experimental	2	0.60
	Quasi-experimental	3	0.90
Theoretical	33	9.94	
Software analysis programmes	AMOS	31	13.14
	ASCAL	1	0.42
	Atlas Ti	1	0.42
	Comprehensive meta-analysis version 2	1	0.42
	ITEMA	1	0.42
	LISREL	12	5.08
	Mplus	3	1.27
	PRELIS 2.8	1	0.42
	Rasch modeller	1	0.42
	SAS	2	0.85
	SPSS	211	89.41
	Statistica	4	1.69
	Winsteps	10	4.24
	Unknown	3	1.27

p. 65). Advanced quantitative-research methodologies may be more readily employed by scholars in psychology as a response to criticism about the validity of the discipline and the generalisability of the results. Although the SAJIP may have a higher representation of quantitative publications for the sampling period, the use of advanced statistical-analysis techniques (structural equation modelling, hierarchical linear modelling) seems to be lagging behind world trends.

Similarly, this study showed that longitudinal research within the SAJIP is under-represented. This trend seems to be prevalent within international applied psychological research in general (Buboltz *et al.*, 2010; Cascio & Aguinis, 2008; Moyo, 2012). Twisk (2013) indicates that longitudinal analysis is not preferred by social scientists as a result of its complexity and the time associated with conducting these studies. Further, given the high demand placed on researchers from academic institutions to proverbially 'publish or perish' (Hurvitz, Kalpakjian, Eckner, Miller & Spires, 2014; Lundin, 2014; Storbacka, 2014), researchers are more inclined to utilise cross-sectional research designs to increase annual research outputs (Müller, Landsberg & Ried, 2014). Storbacka (2014, p. 289) expressed concern relating to the effects of the high demand for research outputs (e.g. limited longitudinal studies, lack of addressing real-world problems, a greater divide between science and practice) by indicating that it leads to 'stylish rubbish'. Longitudinal research, in its most basic form, could address these concerns as it aims to determine causality and temporal stability of research findings in relation to solving real-world problems (Twisk, 2013). Given the current cross-sectional preference for researchers publishing within SAJIP, SAJIP could fall victim to Storbacka's (2014) concerns. SAJIP should aim to stimulate the need for longitudinal research in order to enhance its impact and to narrow the divide between the scientist and the practitioner.

The science-practitioner divide

Various researchers who have previously published on I-O psychology research and practice (see Renecke, 2001; Schreuder & Coetzee 2010; Strümpfer, 2007; Van Zyl *et al.*, 2010) indicated that I-O psychology is an applied science

which aims to address business-related needs. However, the vast majority of the articles published within the SAJIP between 2004 and 2013 were not aimed at addressing immediate practical concerns of businesses or practitioners. Similar to the findings of Casio and Aguinis (2008), the results of this study showed that, to the point of unanimity, the articles in SAJIP are published by academics and in line with domain-specific research focus areas. These focus areas are usually aligned to a university's research specialisation area (e.g. psychometrics or wellness). Given the nature of the quantitative publication preferences, the majority of these articles within SAJIP relates to refining sub-domains of the discipline of I-O psychology to the point where it could be construed as basic research. Through refining concepts, models and methodologies within the discipline, a self-imposed distance from practical concerns may inadvertently be imposed (Casio & Aguinis, 2008; Tushman & O'Reilly, 2007).

The majority of the research in SAJIP during the sampled time frame aims to (1) understand the psychology of individuals within organisational contexts and (2) to address important research questions which do not have immediate relevance to the practitioner. According to Casio and Aguinis (2008, p. 1074), a focus on these aims (1 and 2 above) could mean that I-O psychology '... will not have a major impact on public policy or management practices ...' and could result in a

TABLE 7: Sample sizes utilised in the publications.

Item	Category	<i>f</i>	%
Sample Sizes	1–10	28	9.24
	11–20	14	4.62
	21–30	11	3.63
	31–50	5	1.65
	51–100	18	5.94
	101–150	30	9.90
	151–200	29	9.57
	201–250	25	8.25
	251–300	20	6.60
	301–400	27	8.91
	401–500	13	4.29
	501–1000	37	12.21
	1001–3000	31	10.23
	3001–10 000	11	3.63
10 001–20 000	3	0.99	
20 000 +	1	0.33	

TABLE 8: Qualitative analysis techniques.

Type of qualitative analysis technique	Primary analysis technique (<i>f</i>)	Primary analysis technique (%)	Secondary analysis technique (<i>f</i>)	Secondary analysis technique (%)	Total (primary & secondary analysis techniques) (<i>f</i>)	Total (%)
Appreciative inquiry	3	4.92	-	-	3	2.46
Coding	8	13.11	-	-	8	6.56
Content analysis	22	36.07	26	42.62	48	39.34
Critical hermeneutic epistemology	1	1.64	-	-	1	0.82
Delphi technique	1	1.64	-	-	1	0.82
Discourse analysis	1	1.64	-	-	1	0.82
Grounded theory analysis	1	1.64	-	-	1	0.82
Hermeneutics	1	1.64	3	4.92	4	3.28
Repertory grid technique	1	1.64	-	-	1	0.82
Thematic analysis	22	36.07	26	42.62	48	39.34
Concept formation	-	-	1	1.64	1	0.82
Unknown or not applicable	-	-	5	8.20	5	4.10

professional identity crisis. Van Zyl, Stander and Coetzee (2013) posited that I-O psychology in South Africa is in a state of a professional identity crisis as the gap between the discipline and the profession is continually increasing. This further extends that gap between the scientist and the practitioner (Moalusi, 2001; Palmer, 2006) which may influence perceptions associated with the relevance of the profession (as an applied part of the discipline) within the broader business environment (Casio & Aguinis, 2008).

Practical implications

The findings of the study confirmed the importance of scholarly publications in journals such as the SAJIP in advancing knowledge for traditional evidence-based (empirical research-based) I-O psychology practice. Being a journal that is located within the Southern-African context,

the focus and scope of articles published within the SAJIP may further assist in facilitating the development of an Africa-specific I-O psychology that may also inform the training of I-O psychologists practising within the broader African organisational context. African-based scholars have expressed the need for the Africanisation of psychological knowledge and the application of modern psychological theory and research within African contexts (Dawes, 1998; Meyer, Moore & Viljoen, 2005; Rothmann, 2013; 2014).

The SAJIP may consider expanding the range of empirical studies that are published in the journal by targeting for publication studies using qualitative methodologies. Qualitative research in the various domains of I-O psychology research-practice may contribute to examining individual perspectives in the work context which may offer a more complex understanding of the working lives of people.

TABLE 9: Quantitative analysis techniques.

Type of quantitative analysis technique	Primary analysis technique (<i>f</i>)	Primary analysis technique (%)	Secondary analysis technique (<i>f</i>)	Secondary analysis technique (%)	Total (primary & secondary analysis techniques) (<i>f</i>)	Total (%)
ANOVA/MANOVA/ ANCOVA/MANCOVA	18	7.66	26	11.06	44	9.36
Canonical correlations	5	2.13	6	2.13	11	2.34
Correlations/regressions	82	34.89	52	34.89	134	28.51
Descriptive statistics	9	3.83	72	30.64	81	17.23
Factor analysis (EFA/CFA)	50	21.28	29	12.34	79	16.81
Rasch analysis	10	4.26	4	1.70	14	2.98
Structural equation modelling	49	20.85	7	2.98	56	11.91
Cross-tabulations	4	1.70			4	0.85
Mean comparisons	4	1.70	11	4.68	15	3.19
Scale-level analysis	1	0.43	-	-	1	0.21
Conjoint analysis	1	0.43	-	-	1	0.21
Cross-classification	1	0.43	-	-	1	0.21
Wilcoxon signed rank	1	0.43	1	0.43	2	0.43
Reliability analysis	-		4	1.70	4	0.85
T-test	-	-	3	1.28	3	0.64
Mediation & moderation	-	-	16	1.28	16	3.40
Unknown	-	-	4	1.70	4	0.85

TABLE 10: Mixed-method analysis techniques.

Type of mixed-method analysis technique	Primary analysis technique (<i>f</i>)	Primary analysis technique (%)	Secondary analysis technique (<i>f</i>)	Secondary analysis technique (%)	Total (primary & secondary analysis techniques) (<i>f</i>)	Total (%)
Correlations/regressions	1	14.29	-	-	1	7.14
Descriptive statistics	3	42.86	-	-	3	21.43
Mean comparisons	2	28.57	-	-	2	14.29
ANOVA/MANOVA	1	14.29	-	-	1	7.14
Thematic analysis	-	-	4	57.14	4	28.57
Systematic review	-	-	1	14.29	1	7.14
Correlations or regressions	-	-	1	14.29	1	7.14
Triangulation	-	-	1	14.29	1	7.14

TABLE 11: Basic research-analysis techniques.

Type of basic research analysis technique	Primary analysis technique (<i>f</i>)	Primary analysis technique (%)	Secondary analysis technique (<i>f</i>)	Secondary analysis technique (%)	Total (primary & secondary analysis techniques) (<i>f</i>)	Total (%)
Literature review	3	7.69	32	82.05	35	44.87
Systematic review	32	82.05	2	5.13	34	43.59
Literature meta-synthesis	2	5.13	2	5.13	4	5.13
Unknown	2	5.13	3	7.69	5	6.41

Further, the SAJIP should consider expanding the scope and focus to include the applications of methodologies and practices in I-O psychology in emerging psychology domains in order to stay relevant.

SAJIP should aim to bridge the divide between the scientist and the practitioner. Although it is natural for a divide to exist between the two (Casio & Aguinis, 2008), sufficient connecting mechanisms should exist to span boundaries between the discipline and the profession in order to narrow the divide (Anderson, 2007). In the past, SAJIP has introduced one such mechanism through requiring authors to add a section on the 'practical implications and value proposition for managers' of the research. However, this section is usually neglected or under-emphasised in the articles. Other mechanisms such as (1) inviting shortened practice-based research reports or (2) requesting scholarly versus practice-based commentary on selected research themes could possibly bridge the gap between science and practice. Similarly, practitioners could also be invited to act as reviewers, alongside academics, for new submissions to the journal.

In terms of expanding the journal's international exposure and stature, the SAJIP should encourage publications that use advanced statistical analysis techniques such as Rasch Analysis (Item response theory), structural equation modelling, hierarchical linear modelling and Bayesian analysis. Articles relating to these methodologies, their uses and step-by-step guides could be published in order to introduce scholars to new methods in the field. This may assist the SAJIP in managing the potential impact of outdated research methodologies on its global impact factor and future Web-of-Science listing. Schweigert (2011) also indicates that these statistical techniques have now become the norm within international psychology research and practice. Similarly, it is suggested that more international researchers be invited to publish within the journal and to act as reviewers for submitted manuscripts.

Limitations and recommendations

The limitations of the present study should be interpreted in the light of the stated purpose and objectives of the study and the research approach, strategy and method used. Firstly, the content analysis is descriptive in nature and does not attempt to draw conclusions about the relative significance of the articles and their influence on the field of I-O psychology. Future research of this nature may identify those articles published within the SAJIP that have significantly advanced knowledge and evidence-based practice in the field. The descriptive nature of the article does not account for the quality of the articles or for their impact on organisational outcomes. The quantity of articles on a particular theme published within SAJIP should not be interpreted as the relevant importance thereof within the South African context but should rather be seen as reflecting the underlying interest in a particular topic from researchers in the field. Similarly, the quantity of articles in a given domain should not directly be compared to those in another as the quality of articles and rejection rates may differ across domains. Secondly, although

various strategies were employed to ensure the quality, objectivity and integrity of data, the findings of the study may have been influenced by the researchers' worldviews and biases. The findings should therefore be interpreted within the outlined framework presented in the study. Thirdly, the descriptive nature of the content analysis also does not attempt to make conclusions about future directions of the journal but rather present recommendations in this regard. Fourthly, no differentiation was made in relation to the sampling procedures (probability versus non-probability) of published articles within the SAJIP. Future research could aim to highlight the type of sampling methodology employed in order to understand the effective generalisability of the results (Creswell, 2013a; Salkind, 2012; Twisk, 2013). However, notwithstanding these limitations, the descriptive nature of the content analysis confirmed the focus and scope of the SAJIP and potentially provided valuable new insight into the contribution of the SAJIP to I-O psychology as a field of inquiry within South Africa.

Conclusion

The findings provide valuable insight into the current status of the foci of I-O psychology research as published in the SAJIP between 2004 and 2013 and the contribution made to advancing knowledge and evidence-based practice in I-O psychology. We trust that scholars and practitioners in the field of I-O psychology that submit manuscripts to the SAJIP will find the results of this study informative. We further hope that this study will stimulate scholars to continue producing high-quality empirical studies that address real-life challenges and issues in the work context, advance knowledge that inform evidence-based practice in the field and use advanced data-analysis techniques in generating new insights into contemporary organisational issues. On a final note, it can be concluded that the SAJIP appears to fulfil its focus and scope as well as its mission of being a high-quality medium for advancing scholarship and applied research in the field of I-O psychology.

Acknowledgements

The authors would like to acknowledge Proffs. Gert Roodt (University of Johannesburg) and Marius Stander's (North-West University) contribution to the conceptualisation of this research project in 2012. The authors also acknowledge the support and contributions of Duncan Hooker, the SAJIP Title Operations Coordinator, in obtaining the data for the study. Proffs S. Rothmann (North-West University), F. Cilliers (University of South Africa), M.W. Stander (North-West University), D.J. Geldenhuys (University of South Africa) and A. Warzinski (Yale) are thanked for their formal or informal contribution towards the development of the coding taxonomy used in this study and the classification of difficult themes.

Competing interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Authors' contributions

All authors contributed extensively to the work presented in this article. L.E.v.Z. (University of South Africa) conceptualised the research project with G.R. (University of Johannesburg) and M.W.S. (North-West University) during 2012. M.C. (University of South Africa) coordinated the research project. L.E.v.Z. and M.C. contributed to the study design. Initial data capturing was conducted by D.H. (AOSIS OpenJournals®). Extended data capturing and analysis were performed by L.E.v.Z. The coding taxonomy and classification framework was developed by L.E.v.Z. The classification framework was refined by M.C. and L.E.v.Z. Both M.C. and L.E.v.Z. drafted the manuscript. Researchers acted as critical reviewers for the other's work. Both authors approved the final version of the manuscript before submission to SAJIP.

References

- Aguinis, H., Henle, C.A., & Ostroff, C. (2001). Measurement in work and organizational psychology. In N. Anderson, D.S. Ones, H. K. Sinangil & C. Viswesvaran (Eds.), *Handbook of industrial, work and organizational psychology*, Vol. 1, (pp. 27–50). London, UK: Sage. <http://dx.doi.org/10.4135/9781848608320.n3>
- American Psychological Association (APA). (2007). *Getting in*. Washington, DC: American Psychological Association.
- Anderson, N. (2007). The practitioner–researcher divide revisited: Strategic-level bridges and the roles of IWO psychologists. *Journal of Occupational and Organizational Psychology*, 80, 175–183. <http://dx.doi.org/10.1348/096317907X187237>
- Anderson, V., Northam, E., & Wrennall, J. (2014). *Developmental neuropsychology: A clinical approach*. New York, NY: Psychology Press. <http://dx.doi.org/10.1016/j.neuropsychologia.2014.07.034>
- Arnold, J. & Randall, R. (2010). *Work psychology: Understanding human behaviour in the workplace*, 5th edn. Harlow, Essex: Pearson Education Limited.
- Augustyn, J.C.D., & Cillié, G.C. (2008). Theory and practice in industrial psychology: Quo quo Vadisvadis? *South African Journal of Industrial Psychology*, 34(1), 70–75.
- Barnard, G., & Fourie, L. (2007). A conceptual framework to explore the roles and contributions of industrial psychologists in South Africa. *South African Journal of Industrial Psychology*, 33(2), 34–44. <http://dx.doi.org/10.4102/sajip.v34i2.427>
- Benjamin, J., & Louw-Potgieter, J. (2008). Professional work and actual work: The case of I/O psychologists in South Africa. *South African Journal of Psychology*, 38(1), 116–135. <http://dx.doi.org/10.1177/008124630803800107>
- Bergh, Z.C. (2013). Fields of study and practice areas in industrial and organisational psychology. In Z.C. Bergh & D.J. Geldenhuys (Eds.), *Psychology in the work context*, 5th edn. (pp. 9–19). Cape Town: Oxford University Press.
- Buboltz, W., Deemer, E., & Hoffman, R. (2010). Content analysis of the Journal of Counseling Psychology: Buboltz, Miller, and Williams (1999) 11 years later. *Journal of Counseling Psychology*, 57, 368–375. <http://dx.doi.org/10.1037/a0020028>
- Byrne, Z.S., Hayes, T.L., Mort McPhail, S., Hakel, M.D., Cortina, J.M., & McHenry, J.J. (2014). Educating industrial–organizational psychologists for science and practice: Where do we go from here? *Industrial and Organizational Psychology*, 7(1), 2–14. <http://dx.doi.org/10.1111/iops.12095>
- Cascio, W.F., & Aguinis, H. (2008). Research in industrial and organizational psychology from 1963 to 2007: Changes, choices, and trends. *Journal of Applied Psychology*, 93(5), 1062–1081. <http://dx.doi.org/10.1037/0021-9010.93.5.1062>
- Chaichanasakul, A., He, Y., Chen, H., Allen, G.E.K., Khairallah, T.S., & Ramos, K. (2011). Journal of Career Development: A 36-year content analysis (1972–2007). *Journal of Career Development*, 38(6), 440–455. <http://dx.doi.org/10.1177/0894845310380223>
- Coetzee, M., & Schreuder, A.M.G. (2010). *Personnel psychology: An applied perspective*. Cape Town: Oxford University Press.
- Coetzee, M., & Van Zyl, L.E. (2013). Advancing research in industrial and organisational psychology: A brief overview of 2013. *South African Journal of Industrial Psychology*, 39(1), 1–4. <http://dx.doi.org/10.4102/sajip.v39i1.1174>
- Coetzee, S., & Viviers, R. (2007). An overview of research on positive psychology in South Africa. *South African Journal of Psychology*, 37, 470–490. <http://dx.doi.org/10.1177/008124630703700307>
- Creswell, J.W. (2013a). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage Publications.
- Creswell, J.W. (2013b). *Qualitative inquiry & research design: Choosing among the five approaches*. Thousand Oaks, CA: Sage Publications, Inc.
- Dawes, A. (1998). Africanisation of psychology: Identities and continents. *Psychology in Society*, 23, 4–16.
- De Vos, A.S., Strydom, H., Fouche, C.B., & Delpport, C.S.L. (2002). *Research at grass roots: For the social sciences and human service professions*. Pretoria: Van Schaik.
- Duriau, V.J., Reger, R.K., & Pfarrer, M.D. (2007). A content analysis of the content analysis literature in organization studies: Research themes, data sources, and methodological refinements. *Organizational Research Methods*, 10, 5–34. <http://dx.doi.org/10.1177/1094428106289252>
- Elliott, M.N., Morrison, P.A., Fremont, A., McCaffrey, D.F., Pantoja, P., & Lurie, N. (2009). Using the Census Bureau's surname list to improve estimates of race/ethnicity and associated disparities. *Health Services and Outcomes Research Methodology*, 9(2), 69–83. <http://dx.doi.org/10.1007/s10742-009-0047-1>
- Esterberg, K.G. (2002). *Qualitative methods in social research*, International edition. Boston, MA: McGraw-Hill.
- Fiscella, K., & Fremont, A.M. (2006). Use of geocoding and surname analysis to estimate race and ethnicity. *Health Services Research*, 41(4p1), 1482–1500.
- Grant, A.M. (2006). A personal perspective on professional coaching and the development of coaching psychology. *International Coaching Psychology Review*, 1(1), 12–22.
- Gummesson, D.E. (2000). *Qualitative methods in management research*, 2nd edn. Thousand Oaks, CA: Sage.
- Hansen, J.C., Sullivan, B.A., & Luciana, M. (2011). A social neuroscientific model of vocational behaviour. *Journal of Career Assessment*, 19(3), 216–227. <http://dx.doi.org/10.1177/1069072710395529>
- Hayes, S.C., Barlow, D.H., & Nelson-Gray, R.O. (1999) *The scientist practitioner research and accountability in the age of managed care*, 2nd edn. Boston, IL: Allyn & Bacon.
- Health Professions Council of South Africa (HPCSA). (2008). *Requirements in respect of internship programmes in industrial psychology*. Retrieved n.d., from http://www.hpcsa.co.za/downloads/psycho_education/form_218.pdf
- Health Professions Council of South Africa (HPCSA). (2011). *Regulations defining the scope of practice of practitioners of the profession of psychology: Proposed regulation No. R. 263*. Retrieved, n.d., from <http://www.psyssa.com/documents/Letter%20to%20Psychologists%2021%20August%202011.pdf.pdf>
- Health Professions Council of South Africa, Professional Board for Psychology (HPCSA PBP). (1999). *Attachment B. Policy on roles, registration/licencing, training and education within the professional field of psychology*. HPCSA Print, South Africa.
- Howell, D. (2012). *Statistical methods for psychology*. Stamford, CT: Cengage Learning.
- Hurvitz, E.A., Kalpakjian, C.Z., Eckner, J.T., Miller, S., & Spiers, M.C. (2014). RE: Publish or Perish?. *American Journal of Physical Medicine & Rehabilitation*, 93(5), 459–460. <http://dx.doi.org/10.1097/PHM.0000000000000064>
- Kelloway, E.K. (1995). Structural equation modelling in perspective. *Journal of Organizational Behavior*, 16(3), 215–224. <http://dx.doi.org/10.1002/job.4030160304>
- Kline, R.B. (2010) *Principles and practice of structural equation modelling* (3rd edn.). New York/London: The Guilford Press.
- Landy, F.J., & Conte, J.M. (2004). *Work in the 21st century: An introduction to industrial and organisational psychology*. New York: McGraw-Hill.
- Leong, F.T.L., Pearce, M., & Huang, J.L. (2013). Assessing scientist and practitioner orientations in industrial/organizational psychology. *Journal of Career Assessment*, 21(3), 452–468. <http://dx.doi.org/10.1177/1069072712475180>
- Lundin, R.A. (2014). Changing contexts for the Scandinavian Journal of Management: Publish or perish?. *Scandinavian Journal of Management*, 30(3), 263–265. <http://dx.doi.org/10.1016/j.scaman.2014.05.004>
- Meyer, W., Moore, C., & Viljoen, H. (2005). *Personology: From individual to ecosystem* (3rd edn.). Pretoria, South Africa: Heinemann.
- Miles, M.B., & Huberman, A.M. (1994). *Qualitative data analysis*. Thousand Oaks, CA: Sage.
- Moalusi, K.P. (2001). Repositioning industrial psychology for the creation of new futures in turbulent times. *South African Journal of Industrial Psychology*, 27, 17–21. <http://dx.doi.org/10.4102/sajip.v27i4.794>
- Moyo, N.T. (2012). *Industrial and organisational psychology in South Africa: Research and practice*. Unpublished Masters Dissertation, University of the Witwatersrand, Johannesburg, South Africa.
- Müller, M.J., Landsberg, B., & Ried, J. (2014). Fraud in science: A plea for a new culture in research. *International Journal of Obesity*, 38(4), 572–576. <http://dx.doi.org/10.1038/ijo.2014.16>
- Nicholson, N. (2005). Objections to evolutionary psychology: Reflections, implications and the leadership exemplar. *Human Relations*, 58(3), 393–409. <http://dx.doi.org/10.1177/0018726705053428>
- Palmer, D. (2006). Taking stock of the criteria we use to evaluate one another's work: ASQ fifty years out. *Administrative Science Quarterly*, 51, 535–559.
- Patton, M.Q. (2002). *Qualitative research and evaluation methods*. Thousand Oaks, CA: Sage.
- Petticrew, M. & Roberts, H. (2006). *Systematic reviews in the social science: A practical guide*. Oxford, UK: Blackwell. <http://dx.doi.org/10.1002/9780470754887>
- Pietersen, H.J. (2005). Knowledge development in industrial/organisational psychology (South Africa). *South African Journal of Industrial Psychology*, 31(2), 78–85. <http://dx.doi.org/10.4102/sajip.v31i2.194>
- Pind, J.L. (2014). The aspective psychologist. In J.L. Pind (Eds), *Edgar Rubin and psychology in Denmark*, (pp. 155–193). New York, NY: Springer International Publishing. <http://dx.doi.org/10.1007/978-3-319-01062-5>
- Polgar, S., & Thomas, S.A. (2013). *Introduction to research in the health sciences*. Edinburgh: Elsevier Health Sciences.
- Postal, K. (2014). Think better: Positive neuro-psychology. *The Clinical neuro-psychologist*, (ahead-of-print), 1–3.
- Pretorius, G. (2012). Reflections on the scope of practice in the South African profession of psychology: A moral plea for relevance and a future vision. *South African Journal of Psychology*, 42(4), 509–521.
- Raubenheimer, I. van W. (1994). Die Tydskrif vir Bedryfsielkunde 20 jaar in bedryf. *Journal of Industrial Psychology*, 21(2), 16–18. <http://dx.doi.org/10.4102/sajip.v20i3.579>
- Renecle, S.D. (2001). The relevance of industrial psychology as a profession and discipline in South Africa. *SA Journal of Industrial Psychology*, 27(4), 22–24. <http://dx.doi.org/10.4102/sajip.v27i4.795>

- Riggio, R.E. (2009). *Introduction to industrial/organisational psychology*. London: Pearson.
- Rogelberg, S.G., & Brooks-Laber, M.E. (2002). Securing our collective culture: Challenges facing those designing and doing research in industrial and organization psychology. In S.G. Rogelberg (Ed.), *Handbook of research methods in industrial and organizational psychology*, (pp. 479–485). Cambridge, MA: Blackwell.
- Rothmann, S. & Cilliers, F.V.N. (2007). Present challenges and some critical issues for research in industrial/organisational psychology in South Africa. *South African Journal of Industrial Psychology*, 33(1), 8–17. <http://dx.doi.org/10.4102/10.4102/sajip.v33i1.262>
- Rothmann, S. (2013). From happiness to flourishing at work: A Southern African perspective. *Cross-Cultural Advancements in Positive Psychology*, 4, 123–151. http://dx.doi.org/10.1007/978-94-007-6368-5_7
- Rothmann, S. (2014). Employee engagement in a cultural context. In C. Truss, R. Delbridge, E. Soane, K. Alfes & A. Shantz (Eds.), *Employee engagement in theory and practice*, (pp. 78–91). Abindon, UK: Routledge.
- Rowley, M., & Dalgarno, E.L. (2010). A-level psychology teachers: Who are they and what do they think about psychology as a subject and a discipline?. *Psychology Teaching Review*, 16(2), 54–66.
- SAJIP. (2013). Information for authors and readers of the SA Journal of Industrial Psychology. *South African Journal of Industrial Psychology*, 39(1), iii.
- Salkind, N.J. (2012). *Exploring research* (8th edn.) Salt River, NJ: Pearson Publications.
- Scandura, T.A., & Williams, E.A. (2000). Research methodology in management: Current practices, trends, and implications for future research. *Academy of Management Journal*, 43(6), 1248–1264. <http://dx.doi.org/10.2307/1556348>
- Schreuder, D., & Coetzee, M. (2010). An overview of industrial and organisational psychology research in South Africa: A preliminary study. *South African Journal of Industrial Psychology*, 36(1), 154–164. <http://dx.doi.org/10.4102/sajip.v36i1.903>
- Schweigert, W.A. (2011). *Research methods in psychology: A handbook*. New York, NY: Waveland Press.
- Stier, M. (2014). The biopsychosocial model between biologism and arbitrariness: A commentary to H. Helmchen. *Frontiers in Psychology*, 5(1), 126–136.
- Storbacka, K. (2014). Does publish or perish lead to stylish rubbish?. *Journal of Business Market Management*, 7(1), 289–295.
- Strümpfer, D.J.W. (2007). Lest we forget that industrial and organizational psychology is psychology. *SA Journal of Industrial Psychology*, 33(1), 1–7. <http://dx.doi.org/10.4102/sajip.v33i1.257>
- Terre Blanche, M., Durrheim, K., & Kelly, K. (2006). First steps in qualitative data analysis. In M. Terre Blanche, K. Durrheim & D. Painter (Eds.), *Research in practice: Applied methods for the social sciences*, (pp. 321–344). Cape Town, South Africa: University of Cape Town.
- Theron, C. (2007). Confessions, scapegoats and flying pigs: Psychometric testing and the law. *SA Journal of Industrial Psychology*, 33(1), 102–117. <http://dx.doi.org/10.4102/sajip.v33i1.260>
- Tushman, M., & O'Reilly, C. (2007). Research and relevance: Implications of Pasteur's quadrant for doctoral programs and faculty development. *Academy of Management Journal*, 50(4), 769–774. <http://dx.doi.org/10.5465/AMJ.2007.26279169>
- Twisk, J.W. (2013). *Applied longitudinal data analysis for epidemiology: A practical guide*. London, UK: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9781139342834>
- Van Zyl, L.E. (2013a). *Research methodology for economic and management sciences*. Upper Saddle River, NJ: Pearson Education International.
- Van Zyl, L.E. (2013b). Towards the future: I/O psychology in South Africa. Invited paper presented at the third annual *Student in Psychology Conference*, Johannesburg.
- Van Zyl, L.E., Deacon, E., & Rothmann, S. (2010). Towards happiness: Experiences of work-role fit, meaningfulness and work engagement of industrial/organisational psychologists in South Africa. *SA Journal of Industrial Psychology*, 36(1), 1–10. <http://dx.doi.org/10.4102/sajip.v36i1.890>
- Van Zyl, L.E., & Stander, M.W. (2013). A strengths-based approach towards coaching in a multicultural environment. In J.H. Cornelius-White, R. Motschnig-Pitrik, & M. Lux (Eds.) *Interdisciplinary handbook of the person-centered approach*, (pp. 245–257). New York, NY: Springer New York. http://dx.doi.org/10.1007/978-1-4614-7141-7_17
- Van Zyl, L.E., Stander, M.W., & Coetzee, E. (2013). Identity in peril: The current state of industrial psychology. Research paper presented at the *15th Annual Society of Industrial / Organisational Psychologists in South Africa* conference, Pretoria.
- Ware, M.E., & Johnson, D.E. (Eds.). (2013). *Handbook of demonstrations and activities in the teaching of psychology: Volume I: Introductory, statistics, research methods, and history*. Oxford, UK: Psychology Press.
- Whiston, S.C., Rose, C.S., Peterson III, J.M., & Nguyen, C.P. (2013). Content analysis of the Journal of Career Assessment. *Journal of Career Assessment*, 21(3), 367–377. <http://dx.doi.org/10.1177/1069072712475160>
- World Health Organization (WHO). (2008). GLOBOCAN 2008. Retrieved n.d., from <http://www.globocan.iarc.fr>
- Zammito, J.H. (2004). *A nice derangement of epistemes: Post-positivism in the study of science from Quine to Latour*. Chicago: The University of Chicago Press.