

Encyclopaedia of Organizational Psychology

Entry: Ontology, Epistemology and Methodology

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Abstract

This entry explores the ontology, epistemology and methodology drawn on by research in work and organizational psychology (w/o psychology). Based on a review of studies published in nine highly ranked w/o psychology journals over the past decade, we identify and discuss three dominant themes: (1) the absence of ontological and epistemological debates, (2) sameness of ontology and epistemology, (3) methodological isomorphism. By identifying directions for future w/o psychology scholarship, we recommend greater focus on congruence between ontological and epistemological beliefs and methodology. While this may enable scholars to make more deliberate research choices in how they work, it also fosters pluralism in the field. As such, this entry is an invitation to scholars to further reflect on these themes.

Keywords: ontology, epistemology, methodology, substantive-methodological synergies, methods, qualitative

Defining ontology, epistemology, and methodology

For the purposes of this entry, ontology can be understood as a set of beliefs about the nature of reality. For example, ontology may be viewed as a three-dimensional construct including material realities, subjective-experiential realities, and social-constructional realities (Lundh, 2018). Epistemology concerns how, and by which methods, reality can be known. Both ontology and epistemology shape methodology, broadly understood here as the approach taken to research, and operationalized via the design and methods of particular studies. A greater awareness, discussion, and extension of the variety of the philosophical positions adopted in w/o psychology could empower researchers to make more informed and intentional decisions about research approaches from the diversity of options that are available, resulting in a wider range of relevant research that would enrich the field (Grote & Guest, 2017; Symon & Cassell, 2006).

In this entry we focus on (1) providing a clear picture of current w/o psychology scholarship with regards to ontology and epistemology on the basis of a literature review, (2) providing a critical discussion of the results, and (3) offering practical suggestions intended to enhance future w/o psychology scholarship. This analysis has been inspired by the European Association of Work and Organizational Psychology Small Group Meeting on The Future of Work and Organizational Psychology held in May 2018 in Breda in the Netherlands, where the assumptions, values and purpose of research were extensively debated. Subsequent similar conversations contributed towards the development of a position paper from which we have drawn in this entry.¹

¹ We would like to thank all presenters and participants of the Small Group Meeting “the Future of Work and Organizational Psychology”, 16-18 May 2018, Breda, the Netherlands, for their contributions to the meeting. Participants and presenters include, in alphabetical order: Safaa Achak, Matthijs Bal, Rob Briner, Andy Brookes, Katharina Chudzikowski, Valerie de Cock, Rein de Cooman, Sara De Gieter, Jeroen de Jong, Simon de Jong, Edina Dóci, Luc Dorenbosch, Jiahong Du, Véronique Duflot, Dieu Hack-Polay, Yiannis Gabriel, Motahareh Ghoreysh, Chris Hartgerink, Liselore Havermans, Channah Herschberg, Joeri Hofmans, Severin Hornung, Jianwu Jiang, Renze Klamer, Dorien Kooij, Kudrat Khuda, Evgenia Lysova, Xander Lub, John Mendy, Christina Meyers, Stefan Mol, Jose Navarro, Sanne Nijs, Guy Notelaers, Carolin Ossenkop, Yvonne G.T. van Rossenberg, Laura Röhlman, Omar Solinger, Junmei Song, Joanna Sosnowska, Andromachi Spanouli, Mette Strange

Review of ontology, epistemology, and methodology in w/o psychology research

To obtain an overview and understanding of the state of debates on ontology and epistemology in w/o psychology research we conducted a systematic literature review of work published between 2010 and 2019 in academic journals that are highly ranked and relevant to the w/o psychology field. The ranking frameworks used are described in the next section covering inclusion and exclusion criteria.

Inclusion and exclusion criteria

Journals for inclusion were identified on the basis of (1) the journal rankings (including H Index, Impact factors, CABS 2018, ABDC 2016, FT50 2016, EJL 2016, CiteScore 2017, and SJR) and (2) the relevance to the w/o psychology field as indicated by the scope of the journal. Based on these two criteria we selected the following nine journals: (1) Annual Review of Organizational Psychology and Organizational Behavior, (2) Personnel Psychology, (3) Journal of Applied Psychology, (4) Journal of Organizational Behavior, (5) Organizational Behavior and Human Decision Processes, (6) Organizational Psychology Review, (7) Journal of Vocational Behavior, (8) Journal of Occupational and Organizational Psychology, and (9) European Journal of Work and Organizational Psychology. To further narrow the total number of papers to a manageable amount, we only included articles published between 2010-2019, including in press articles, yielding a total of 4,957 articles.

Analysis

Our analysis of the 4,957 articles consisted of three steps: (1) a systematic search using the terms “ontolog*” and “epistemolog*” in all fields in Web of Science (WoS), (2) the creation of a visual representation of the w/o psychology field drawing on an advanced bibliometric mapping technique, and (3) a systematic literature review and analysis of a stratified sample of 10% of the 4,957 articles. The latter two methods require some elaboration.

Bibliometric mapping

The bibliographical data from the 4,957 articles identified in WoS were extracted to help create science maps using the *VOSviewer* software (Van Eck et al., 2010). *VOSviewer* combines advanced techniques for science mapping including three steps: (1) term extraction and selection, (2) visual mapping of relatedness, and (3) clustering of science objects. In the first step the data were analyzed on the basis of *noun phrases* (i.e., groups of nouns and preceding adjective) that occur in the abstracts or titles of at least 20 different documents. This is described as the co-occurrence of keywords, which includes both author-based keywords and keywords identified by KeyWords Plus. Generic noun phrases were removed (such as “well”, “choice”, and “future-research”) using the Kullback-Leibler distance, and duplicates were recoded (e.g. “meta analysis” and “meta-analysis”). Then, the 437 valid keywords were coded into two categories: 66 keywords were identified to be related to ontology and epistemology (for example “meta-analysis”, “model” and “mediation”), and 370 keywords were identified for analysis of topics studied in w/o psychology.

The analysis of the keywords related to ontology and epistemology is based on the *association strength measure*. The association strength includes the ratio between the number of

times the keyword occurs (occurrence) and the sum of the number of co-occurrences between the term and other terms (total link strength). The association strength values are visualized using the Visualization of Similarities (VOS) mapping technique, which is a two-dimensional representation of the term relatedness (Van Eck, et al., 2010). In the case of keywords, the co-occurrence is the number of times the keyword is used for an article: the total link strength signals the centrality of the term in the network. A small distance between keywords in the map indicates that the keywords occur in the same articles together frequently. Keywords at the center of the map co-occur with a wider range of keywords than those at the periphery of the map. The final step in the analysis is the identification of clusters. The VOS clustering technique groups keywords together on the basis of the total link strength, indicated by the colors in the network visualization (see Figure 1).

Review of sample of articles

The final step in our review of the w/o psychology field included the systematic review of the content of the articles. We reviewed a stratified sample of 10% of the total published articles (selecting each 1st, 11th, 21st, 31st etc. published article from each journal), yielding a total of 496 articles². We recorded details of each paper using a standardized data extraction form, including data relevant to their ontological and epistemological character in the following categories: (1) the presence of a discussion of ontology in the paper, (2) the ontological approach taken in the study, (3) the positioning in the empirical cycle (deductive, inductive or abductive), (4) the design of the study, (5) the analytical approach, and (6) the type of data collected. A pilot was conducted to refine the data extraction process and develop consistency in the team; queries or discrepancies

² We gratefully acknowledge the work of MSc students Chloe McKew, Rowan Arthur and Beth Hopkins for assisting in reviewing these papers in 2019-2020.

were discussed, and we dip-sampled each other's analysis to facilitate sense-checking and promote consistency.

Results

The analysis of w/o psychology research of the past decade yields a large set of results, which we organized based on the following recurring themes:

1. The absence of ontological and epistemological debates,
2. Sameness of ontology and epistemology,
3. Methodological isomorphism.

1. The absence of ontological and epistemological debates

Not one of the 4,957 published articles was found using the search term “ontolog*” in WoS, including this term in all fields. After removing the 2010 – 2019 timeframe from the search, we found a total of three articles that explicitly included the discussion of ontology (Young & Collin, 2004; Mark, 2006; Harvey & Wilson, 2000). The overt discussion of epistemology in w/o psychology was equally rare: only four out of 4,957 articles (0.08%) were found using “epistemolog*” (Guichard, Pouyaud, De Calan, & Dumora, 2012; Hannah, Sumanth, Lester & Cavarretta, 2014; Rynes & Bartunek, 2017; De Cooman, Mol, Billsberry, Boon, & Den Hartog, 2019). Another four articles that discussed epistemology were found that were published before the 2010 – 2019 timeframe (Whitley, Piero, Feij, & Taris, 1995; Johnson & Cassell, 2001; Young and Valach, 2004; Savickas, Nota, Rossier, Dauwalder, Duarte et al., 2009). Two articles included discussion of both ontology and epistemology (Mark, 2006; Young & Collin, 2003).

The analysis of bibliometric data in VOSviewer (Figure 1) on the basis of keywords, showed that 60 out of 476 keywords were not topical but rather methodological and could therefore be related to ontology or epistemology. Most of these keywords related to methodological choices with regards to design (e.g., “antecedents” and “multi-level”) and analysis (e.g. “mediation”, “moderation”, and “meta-analysis”). None of the 476 keywords reflected discussion of ontology. The 60 keywords we categorized as epistemology related specifically to methodological choices, design, and analysis.

- Include Figure 1 about here -

2. *Sameness of ontology and epistemology*

The absence of ontological and epistemological discussion can be seen as a sign of the pre-eminence of one ontological paradigm, in that researchers may not identify themselves with a position explicitly but rather simply adopt the assumptions that are normal in the field. In w/o psychology we suggest this is post-positivism. Post-positivism is an epistemological position that generally follows the principles of the natural sciences in researching the social world tempered by, for example, awareness of researcher subjectivity and social context. This is manifested in the w/o psychology field by extending the natural science paradigm to the study of behaviours and social phenomena. Deeply rooted in logical positivism, post-positivism seeks to establish relationships between observable variables, developing generalizable theories that are tested by relatively objective researchers (Steffy and Grimes, 1992), leading to a focus on validity, reliability, and operationalization (Johnson and Duberley, 2000).

The analysis of bibliometric data confirmed keywords central to post-positivism to be central in the network and to occur frequently, such as “model” (471 occurrences, 5244 total link strength), “validation” (349 occurrences, 1698 total link strength), “validity” (273 occurrences, 990 total link strength), and “reliability” (183 occurrences, 371 total link strength). In addition, the analysis of keywords confirmed the focus of w/o psychology research on seeking to test relationships between variables that assume causal direction, reflected in keywords such as “consequences” (343 occurrences, 3551 total link strength), “antecedents” (365 occurrences, 3713 total link strength), and “outcomes” (207 occurrences, 2066 total link strength).

Since ontology and epistemology were rarely explicitly discussed, we reviewed the 10% sample to provide a more in-depth analysis. Once non-applicable articles were excluded (e.g., reviews or editorials), 430 out of 443 papers drew on a post-positivist epistemology (97.1%). Eleven of the thirteen remaining papers could be labeled as interpretivist, including three papers taking a phenomenological perspective and one taking an ethno-methodological perspective. In two of the papers, the ontological stance was difficult to determine, thereby leading to their characterization as methodological pluralism (Crozier & Cassell, 2016) and informed induction (Hackman, 2012), suggesting ontological choices were inherently connected to epistemological choices. Hence, we reviewed the 10% sample with regards to the deductive (theory testing) and inductive (theory exploring) nature of the studies. Out of 443 empirical papers, 362 articles were identified as deductive (82.3%), 48 were inductive (10.9%), 6 articles included both inductive and deductive elements (1.4%), and 27 were unclear (6.1%).

3. Methodological isomorphism.

The analysis of bibliometric data in VOS viewer on the basis of keywords showed a focus on a particular, homogeneous set of methodological approaches and analytical techniques used in w/o psychology research. Frequently occurring keywords were “mediation” (696 occurrences, 3022 total link strength), “moderation” (458 occurrences, 1537 total link strength), and moderated mediation (135 occurrences, 202 total link strength). A total of seven clusters could be identified, which could be labeled as (1) “mediation – moderation”, (2) “meta-analysis – validation”, (3) “dynamics – longitudinal”, (4) “scale – questionnaire”, (5) “psychometric properties – construction”, and (6) “intervention – diary study”. For an illustration, see Figures 1a and 1b.

The systematic literature review showed cross-sectional design was the most common (212 out of 386 empirical studies, 55%). A total of 140 studies were not cross-sectional (36%), with 53 studies using a time-lagged design (14%), 13 studies measuring variables twice in a (semi-)experimental design (3%), and 71 studies applying a longitudinal design including data collected at least at three time-points (18%). The combination of cross sectional and experimental design in a multi study occurred in 34 studies (9%). Survey data was most common (64%) before (semi)experiments (8%), which were also frequently combined with survey research in a multi-study (17.5%). Meta analyses were less frequently used (4%), similar to interviews (3.5%), and analysis of secondary data (2%). Articles were rarely based on a case study (2 studies), observations (2 studies), simulation (1 study) and diary data (1 study).

Critical reflection

The discussion of ontological and epistemological foundations of research is conspicuously minimal in w/o psychology, probably reciprocally reinforced by the ubiquity of post-positivist perspectives (Symon & Cassell, 2006). Explicitly acknowledging, questioning,

and debating the values and beliefs that shape research —strengthened by insights from other fields and cultures—could help scholars make more conscious (and less limited) decisions about why, what, how, and whom to research. Diversifying beyond these normative research approaches may gradually legitimate scholarship that problematizes dominant modes of knowledge production as a way of seeking to develop socially progressive alternatives or pointing to the need for greater reflexivity in research approaches.

We recognize that researchers who use alternative methodologies face several challenges that arise from disciplinary expectations and norms, epistemological, theoretical, and interpretive orientation, certain forms of data, or publication style and structure. Consequently, studies in w/o psychology that draw on other paradigms and apply an alternative set of methods are rare. The comparatively few examples that do showcase non-mainstream understandings of the nature of the world, knowledge, and research, merit special attention (e.g., the special issue edited by Symon & Cassell, 2006).

The epistemological paradigm of post-positivism rests on a tendency to assume a relatively singular and homogeneous social reality, often operationalized in deductive approaches to methodology. A deductive approach reduces the number of variables and levels of analysis that can be simultaneously incorporated into research designs. Approaching studies in this way constrains what can be explored, and limits the scope for the unexpected, both in a single research project and in a research field.

The types of problems that can be resolved by deductive, theory-driven approaches to research require simple and isolated well-defined questions, whereas the complexity of the world around us is increasing. To some extent, inductive approaches offer a broader scope by accepting multiple subjective truths, seeking discovery rather than confirmation. The logic of abduction

forms a third way or “middle ground” between inductive and hypothetical-deductive approaches, which holds theories lightly and uses pre-understanding to iteratively move between theory and empirical materials. This approach enables sensemaking of findings, demonstrating plausible relationships, and offering the best available explanation based on existing and relevant community standards of rigor. Abductive approaches are particularly valuable in contexts that are so complex (e.g., multiple stakeholders, and/or multiple levels of factors that influence each other) and/or so dynamic (e.g. changes over time, in response to interventions), that they cannot be modeled in a static way. Thus, this also requires methodologies that are more iterative, testing, and refining hypotheses until a solution, answer or value is found.

As the complexity of theories and research questions increases, so does the complexity of methods and analyses. During recent decades, several novel techniques, such as experience sampling methods, multilevel models, mixture modeling, and the general structural equation modeling framework have become common instruments in the toolbox of w/o psychology scholars. New techniques, such as functional data analysis, time series analyses, neural networks, instrumental variables estimation, and the use of physiological data, are on the brink of common usage. Despite the promise of these novel methodologies, research in w/o psychology does not currently appear to be taking full advantage of these developments. A small set of methodological options is applied disproportionately frequently, out of the broad variety of types of data and analytical techniques available.

In parallel, there have been repeated calls for methodological paradigm-shifts. One example is the adoption of a person-centered approach, identifying optimal subgroups of individuals through an inductive explorative process elucidating intra-individual antecedents and outcomes. A person-centered approach, as opposed to a variable-centered approach, does not

assume the population under study to be homogeneous in nature. Instead, by allowing for population heterogeneity, person-centered methods take into consideration the non-ergodic nature of processes, meaning that their adoption differs across people and time. Despite some recent developments of this approach, it remains rare, regardless of the contribution of the study.

Future avenues for ontology, epistemology, and methodology

Creating a future of greater ontological and epistemological pluralism will involve the education and socialization of students and academics into the full range of epistemologies and methodologies. Lopsided training provision, as well as the artificial qualitative versus quantitative divide, generates a climate that is not conducive to exploring and adopting alternative research modes. This imbalance is reinforced by field-wide norms that impede or negatively influence the recognition, appraisal, and engagement of approaches beyond the dominant paradigm. Altering systems of this nature requires collective effort, enhanced by networks of change-oriented scholars.³ Two themes that have emerged from discussions of such networks in recent years include the benefits of reflexive practices and substantive-methodological synergies.

Reflexive practices

Deductive research draws more strongly on predetermined methodological templates, while inductive research communicates about the analytical approach in more detail and is more explicit in justifying its purpose. Recently, Levitt and colleagues (2018) developed criteria in an APA task force to evaluate the quality of inductive research, referring to fidelity and utility,

³ For example, see the entry on Future of Work and Organizational Psychology

which is equally relevant to deductive types of research. If all types of research in w/o psychology discussed its underlying methodological choices, transparency would be enhanced, and methodology would be better considered and communicated, without setting yet another rigid standard. Editors and reviewers play a key part in this process.

One specific practice that may elicit reflection about the values that underpin our work is the writing of a reflective piece after submitting a manuscript to a journal (this idea emerged at the afore-mentioned meeting in Breda). A short note to oneself or the research team may stimulate reflection about the main assumptions underlying the study, important doubts and issues that emerged, challenges and successes of collaboration, and difficult decisions that were taken. This may offer a psychologically safe (plat)form for individual and team reflection about how close the author(s) stayed to their personal and/or work values. Henceforth, when starting a new study or project, the researcher may start by rereading paragraphs from previous research projects (and possibly sharing it with co-authors), raising awareness of and reflecting on the values underpinning the research.

Substantive-methodological synergies

Marsh and Hau (2007) found in the field of educational psychology an increasing level of disconnection between theoretical and new methodological developments. This has led them to emphasize the need for substantive-methodological synergies, which occur when studies are examining substantively and practically relevant issues in new and creative ways through the use and improvement of state-of-the art methodological tools. Complex questions such as those involved in w/o psychology often lead to the development and refinement of cutting-edge methodologies, leading in turn to new and valuable substantive insights.

For a single researcher, combining the profound knowledge of complex theory, methods, and analyses may become arduous. One way forward can be found in academic collaboration. Assembling teams of researchers with substantive and complementary methodological backgrounds can lead to substantive-methodological synergies, such as the development of models that are tailor-made for a specific research question or type of data (Marsh & Hau, 2007). Such synergies are characterized by strong interactions between the substantive and the methodological sides, both inspiring each other. Awareness, recognition and respect of underlying values and ontological and epistemological beliefs are key to the success of synergistic research teams.

This is particularly relevant in the light of the rise of inductive methodologies exploring models, profiles, and trajectories in quantitative data (e.g., quantitative discovery techniques such as data mining, latent profile/class analysis, latent trajectories). Researchers with a background in deductive methodologies tend to seek pre-determined methodological templates for inductive quantitative research, rather than adopting the transparency, communication, and justification that is common to inductive research using qualitative data. Dynamic and person-centered approaches show great potential for unpacking the variety of individual developmental paths, which would provide space for pluralist perspectives. Ontology, epistemology, and methodological normative frameworks are inherently intertwined, hence discussion and dialogue at a philosophical level are necessary to avoid moving between dogmatic frameworks. We summarize these reflections in Table 1.

- Include Table 1 about here -

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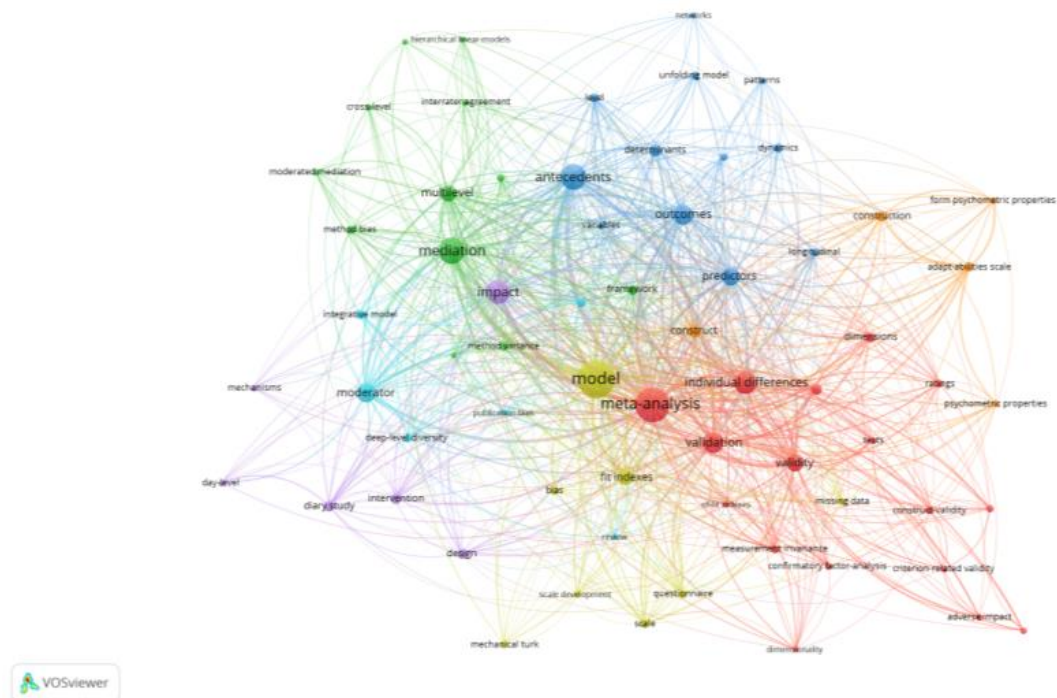
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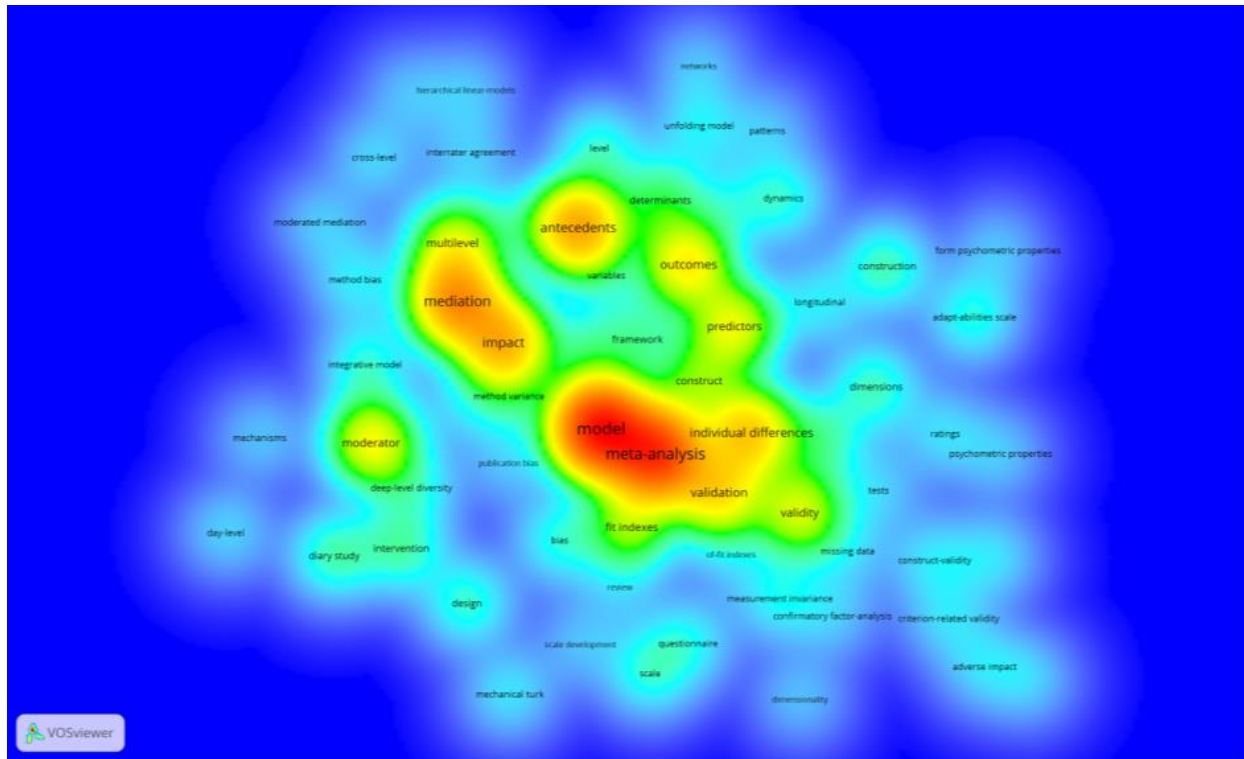
Figures

Figure 1. Network analysis: co-occurrence of ontology and epistemology keywords*.

1a. Network visualization



1b. Density visualization



*Analysis of 66 valid keywords with a minimum occurrence of 20, 7 clusters.

Table 1. Directions for the future of ontology, epistemology, and methodology in w/o psychology

<i>Themes</i>	<i>Critical reflection</i>	<i>Future avenues</i>
1. The absence of ontological and epistemological debates	Raising awareness, challenging, and discussing the values underpinning research	· Communicate ontological and epistemological choices · Write a reflective piece after submitting a manuscript · Engage in individual and team reflection on how to conduct research staying close to work values
2. Sameness of ontology and epistemology	Reflecting on how we recognize, understand, appraise, and engage with different approaches to research and analytical processes beyond the dominant post-positivistic paradigm and deduction.	· Teach, use and accept a variety of ontological and epistemological frameworks · Apply more frequently inductive and explorative types of approaches developing new theory · Increase transparency, communication and justification of methodology

3. Methodological isomorphism	More types and variations of methodologies are developed but not adopted in our research. Through methodological pluralism, we can seek new and creative methodologies, that better address the issues we seek to study.	· Methodological cross-fertilization through collaborative and interdisciplinary projects · Refrain from seeking pre-determined methodological templates, instead transparently communicate and justify choices · Integrate the discussion of ontology, epistemology and methodology
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