

Exploring Team Role Typologies and Taxonomies: A Systematic Literature Analysis

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Abstract: The field of team role typologies and taxonomies is characterized by a lack of conceptual clarity and dominance of a single primary source. This study aims to shed light on the relationships between authors of team role typologies/taxonomies by conducting a systematic literature analysis. The focus is on analyzing authors listed in articles specifically addressing team roles. The resulting analysis provides a list of authors of typologies or taxonomies of team roles as a preparation for further phases of our research. The methodology employed involves a literature review. The selection of articles was based on the Scopus database, with additional searches conducted on publisher websites and ResearchGate to ensure comprehensive coverage. Advanced lexical search software facilitated the identification of authors associated with typologies and taxonomies. The study presents a waypoint list of probably relevant authors for further analysis. Furthermore, the potential of AI tools in literature review and the use of applications for creating schematic maps based on bibliographic records are discussed, with a promise of further investigation in future studies. Overall, this study provides a comprehensive summary of authors involved in the development of team role typologies and taxonomies, providing a foundation for future research to validate and expand upon the identified author relationships. It emphasizes the need to explore the diverse approaches in this field, while also recognizing the significant influence of seminal figures such as M. Belbin. By unraveling the complexities of author relationships, this study paves the way for deeper insights into team dynamics and roles within organizations.

Keywords: Team role typologies, Team role taxonomies, Systematic literature analysis, Literature review, MAXQDA, AI tools

1. Introduction

The field of team role typologies and taxonomies suffers from poor conceptualization, with one primary source dominating for reproduction and critical reflection. However, there are numerous models, varying in size and composition, created by different groups of authors. To shed light on the relationships between these approaches and enable further analysis of the team role typologies/taxonomies, we conducted a systematic literature analysis of authors identified in the Scopus database who have contributed to partial approaches. This study aims to examine the relationships among authors of team role typologies and taxonomies as documented in articles focused on team roles. The outcome of this analysis is a relational map that identifies clusters of authors. Regrettably, due to the constraints of this article's scope, we are unable to present the comprehensive map of authors' relationships that emerged in the second phase of our analysis. However, we anticipate publishing a separate research paper dedicated specifically to showcasing and analysing the intricate web of connections between the authors identified in our study. This map of authors' relationships promises to provide valuable insights into the interplay and collaborations within the field of team role typologies and taxonomies. By delving deeper into these relationships, we can gain a more nuanced understanding of the scholarly landscape and the evolution of ideas in this area.

Prior to delving into the subsequent topic, it is essential to provide an elucidation of the differentiation between typology and taxonomy. Smith (2002) provides a comprehensive distinction supported by academic references, highlighting the difference between typologies and taxonomies. According to Smith, typologies are based on dimensions that represent specific concepts or mental constructs rather than being derived from objective analysis of empirical data. On the other hand, taxonomies are built on measurable and empirically observable characteristics. In line with Smith's distinction, team role systems that are developed as mental constructs can be categorized as typologies, as they rely on conceptual dimensions. Conversely, approaches that construct team role structures based on observable and measurable characteristics can be considered taxonomies. These taxonomies categorize individuals into roles based on empirical data and measurable criteria. By acknowledging the differences between typologies and taxonomies, researchers can adopt an appropriate framework for studying and understanding team roles, considering whether their focus is on mental construct and theoretical dimensions or empirical observations.

When exploring team role typologies and taxonomies, it is essential to consider prominent authors who serve as foundational pillars in the research conducted by their successors. Meredith R. Belbin stands out as one of the key figures in this field, both in terms of conceptualization and citation impact (see below). Numerous

authors have elaborated on, verified, or challenged the validity of Belbin's model (e.g., Broucek & Randell 1996; Dulewicz 1995a; Fisher et al. 2001; Furnham et al. 1993; Prichard & Stanton 1999; Senior 1998), and his concept continues to inspire and provoke thought. Belbin's model is founded on the distinction between team roles and functional roles. A team role represents a set of behaviours that contribute to the team's progress, with these behaviours falling within a finite range and forming interrelated clusters known as team roles. On the other hand, a functional role is determined by the job requirements, and the worker performs specific duties based on relevant competencies (Belbin & Brown 2022). Aritzeta (2005) delves further into the differentiation between positional roles in the organizational structure and team roles, describing the latter as a negotiation process between individual competencies and the team's needs, shaping the way each team member adapts by assuming a specific team role (Aritzeta 2005, p. 159). Margerison (2001) presents an alternate perspective on team roles, highlighting the importance of team competencies—enabling teams to succeed—rather than solely focusing on the expected behaviours associated with general roles. Efforts have also been made to establish links between different typologies and taxonomies. For instance, Driskell et al. (2017) attempt to integrate numerous team role descriptions within the research literature by categorizing them into three fundamental dimensions: dominance, sociability, and task orientation. Another approach involves classifying roles based on criteria such as influence, function, and contribution (Fujimoto 2016).

Establishing a theoretical foundation in team role models poses significant challenges. Notably, there is a lack of clear development pathways for theories by individual authors. Many authors rely on the widely recognized concept introduced by M. Belbin. They either apply it to specific team studies, validate its applicability, or construct their own team role concepts, often including redefined individual roles based on criticisms of the original concept. The complexity is further compounded by the interdependence among authors and their search for unique influences that shape each author's perspective on team roles and their taxonomies. Therefore, the objective of this research was to analyse the relationships among authors who have presented team role typologies and taxonomies in articles centred on team roles. The outcome of this analysis will be a relational map that visualizes clusters of authors and their interrelationships which will be published in a subsequent paper.

2. Methodology

The methodology employed in this research consisted of a literature review followed by an analysis of author relationships using systematic literature mapping. Soaita et al. describe systematic literature mapping as "a valuable tool for comprehending the structure of a particular topic" (Soaita et al. 2020, p. 338). In the initial phase, we followed the six work phases proposed by Kuckartz and Rädiker (2019) for creating a literature review based on literature search:

- Formulation of research questions and objectives of the review.
- Selection of appropriate bibliographic databases.
- Determination of relevant search terms within these databases.
- Application of practical and methodological criteria for the selection of articles.
- Conducting the literature review.
- Synthesizing the results and writing the review.

Once the aim of the study and the research question, "What does a network of author relationships based on shared authorship between authors dealing with team role typologies/taxonomies look like?" were established, we proceeded with the selection of the database. For the initial phase, we chose Scopus as the primary source. We conducted a search for articles using the keyword/association "team roles." Scopus was deemed appropriate due to its extensive coverage and relevant search tools. The selected keyword/phrase was intentionally broad to encompass articles that may not solely focus on typologies/taxonomies but address them within the broader context of their research objectives. The resulting 165 articles obtained from this search satisfied the requirements for a comprehensive literature review and fell within the recommended range of tens to hundreds of papers suitable for content analysis, as suggested by Kraus et al. (2022). No additional filter (e.g. time range) had to be applied to the list of sources.

In consideration of our previous experiences, it became apparent that a substantial number of articles behind paywalls in databases were inaccessible for regular low-cost research. Therefore, we applied our evaluation criteria exclusively to the final set of available and downloaded full-text articles. We obtained the article corpus primarily through access to the Scopus database, and for the subsequent step, we conducted searches on publishers' websites using Zotero and manual searching (leveraging institutional access to various

databases). Additionally, we utilized the ResearchGate network, where freely available texts were identified, or requests for sharing were made, leading to access granted in several cases. This dedicated effort, combined with abstract filtering, resulted in a final set of 104 articles for further analysis.

Next, we conducted an extensive search within the texts to identify authors associated with each team role typology or taxonomy. To facilitate this step, we employed the advanced lexical search in MAXQDA 2018 software. Our query encompassed all the papers and targeted passages (along with their surrounding content) that mentioned terms such as "team role," "typolog*," "taxonom*," "definition" and various combinations thereof. The asterisk (*) sign is used to expand search results. The asterisk serves as a wildcard character in search queries, allowing the software to retrieve variations of a word that have the same base but different forms. Using the asterisk allows the software to search for both the term "team role" and "team roles," as well as "typologies" and "taxonomies," and so on. This helps to capture a broader range of relevant results and ensure a more comprehensive search.*

This initial labelling of text sections aided in navigating the articles more efficiently. We then tagged authors who were recognized as the authors of specific typologies or taxonomies in the prepared documents. Initially, there were 30 such authors (though this number was subsequently reduced for closer examination of the texts). The frequency of codes associated with different authors' names within each text ranged from 2 to 221 occurrences. This paper focuses on presenting the data and findings derived from this level/step of analysis. The subsequent steps of the research described in this chapter below, including further data analysis and additional findings, are intended to be shared in future publications. These future publications will delve deeper into the subject matter and provide a more comprehensive understanding of the research topic. This study provides an initial list of resources and their preliminary analysis for further development of this topic. The decision to present the results of the subsequent steps in separate publications is aimed at ensuring a thorough and detailed exploration of the research findings.

These authors' names were employed as keywords for an advanced lexical search using MAXQDA 2018. The software identified approximately 2,400 passages tagged with authors' names as the primary search string. While it is important to note that a considerable portion of these segments did not contribute new information and consisted of authors' names in publication headings and references, the search nevertheless revealed a substantial number of crucial text segments that will serve as the basis for analysing specific approaches in future research.

Key publications on which the mapping of authors' relationships is based have been cited and highlighted. There were a total of 142 such publications. A detailed content analysis of these sources will likely be the next step in future studies. From this list, we proceeded to map the relationships between individual authors by examining the chains of relationships between the first and second authors. Only second and subsequent authors who appeared in a single author's publications and did not contribute to connecting other publications were excluded from the final map.

Due to the complexities involved in weighting various passages, we do not present the results of the quantitative analysis of frequency extensively in this paper. The uneven distribution of self-citations among authors, particularly in follow-up research, posed challenges to meaningful quantitative analysis. Therefore, quantitative results are not particularly relevant for demonstrating relationships. Quantitative analysis of this kind could only provide false information about the network of relationships hidden behind the exaggerated self-citation patterns of some of the authors. For the schematic map provided below, each author was counted only once.

It is important to note that we did not include Meredith Belbin's approach in the analysis for several reasons. First, there was a significant number of coded segments related to Belbin's typology during the middle part of the analysis (the semantic search flagged over 1,000 passages referencing Belbin's typology, accounting for approximately 40% of all coded segments). The imbalance between the number of these references and references in more recent works like "Team Roles at Work" (Belbin & Brown 2022), which may have included reflections on other studies, or the limited number of available publications where Belbin built upon the ideas of other authors, played a decisive role in this decision. Thus, our focus was on academically organic, interconnected, or lesser-known authors. It is worth noting that the vast majority of these authors mention Belbin's theory in some way, reflecting its influence.

3. Results

In Table 1, we present the authors we identified as authors of typologies/taxonomies in the original articles downloaded from the Scopus database. Typically, one author's name is provided in the text, while two authors are listed if the linked publications were solely authored by them. After careful examination, some codes were removed, resulting in approximately 1,700 remaining coded segments. We chose to preserve these segments in the code set to address any uncertainties that may arise. In future research, we intend to conduct a thorough examination to determine whether the concepts presented by the authors constitute typologies or taxonomies. Additionally, authors who demonstrated inconsistencies with the theme and goal of the analysis were eliminated from the code list.

Table 1: List of authors of typologies/taxonomies

Ancona et al (e.g. 1992)	Bales (Bales, 1950)	Barry (D. Barry, 1991)
Beck (1989)	Belbin (e.g. Belbin & Brown, 2022)	Benne & Sheats (Benne & Sheats, 1948)
Bittner (e.g. 1992)	Burke (e.g. 2006)	Davis (1992)
De Vreede (2019)	Driskell T (e.g. 2017)	DuBrin (e.g. 1995)
Driskell JE (e.g. 2006)	Dulewicz (1995)	Fujimoto (2016)
Gander (e.g. 2018)	Gutiérrez (2019)	Hare (e.g. 1973)
Hollenbeck (e.g. 2012)	Lehmann-Willenbrock (e.g. 2016)	Manning (2013)
Margerison (e.g. 1986)	Moreno (1934)	Mumford (2008)
Mathieu (e.g. 2015)	Nestsiarovich & Pons (e.g. 2018)	Parker GM (1990)
Parker SK (e.g. 1998)	Platt (2016)	Ruch (e.g. 2018)
Stempfle (2001)	Stewart (Stewart, 2000)	Wiggins (e.g. 1979)

The subsequent step involved identifying references within the refined set of documents, which comprised 76 out of the original 165 (after the initial correction, the number was reduced to 104) articles. Within each document, we searched for references to articles that the authors believed contained the description/definition of the typology/taxonomy. These sources were compiled into a database, which was then analysed for relationships based on co-authorship. The resulting schematics illustrating the relationships between authors in team role typologies and taxonomies will be published in the next article, providing valuable insights into collaborative networks within the research community.

4. Discussion

The results of this study highlight the diverse range of approaches to team roles. While further exploration and validation are necessary, a significant number of authors exhibit originality in their work upon initial examination. Notably, M. Belbin emerges as a prominent figure who has greatly influenced the field, with each study citing him as a key source. However, we made a deliberate decision not to include Belbin's work in our further analyses in order to mitigate the dense network of references. The presented data also reveal a consistent emergence of new approaches to typologies and taxonomies of team roles since the 1980s.

The presented results serve as an initial exploratory input for further research on theories, concepts, and models of typologies and taxonomies. Similar to the findings of Soaita et al. (2020), systematic literature mapping can serve as an initial stage for more comprehensive evidence reviews.

However, as the limit of this study, we acknowledge that the list may not be perfect, and further examination may reveal some models as subsidiary or secondary to mainstream typologies and taxonomies. It is also possible that some research may have been overlooked in this analysis and can be discovered through a more in-depth exploration.

4.1 Methodological note

A final note pertains to the emerging practice of incorporating artificial intelligence (AI) into research, particularly in the field of literature review. In our parallel exploration of AI's potential in this research (where we compared the results obtained from AI tools to the results we had already acquired), we generally did not find qualitatively superior or more effective outcomes in the specific research area of this study. AI-powered text generation and search applications, such as ChatGPT, Petal, and Scite, provided inconclusive answers when responding to both simple and relatively complex search queries or question statements. The complexity of data processing by these tools still requires improvement. It is possible that the low significance of the AI results could be attributed to the inadequately formulated prompts (request/question statements), despite our attempts to refine or expand them. Another limitation is the ongoing issue of limited access to individual texts, which AI cannot retrieve without further screening of user profiles—a step that poses challenges even for human researchers. Such restricted access to scientific literature remains a significant obstacle for theoretical reviews, and it is possible that the results that were excluded due to inaccessibility in the subsequent steps were not reflected in the AI results.

In contrast, applications that enable the creation of schematic maps using bibliographic records and known references in both directions present a promising approach as a parallel or even primary solution for this type of research. These applications offer the potential to enhance our understanding of the field by visualizing the connections between authors and their works. In future research papers focusing on this field, these applications will be further explored and described in greater detail, highlighting their potential contributions to the study of team role typologies and taxonomies.

5. Conclusion

The topic of team roles, their typologies, and taxonomies has been widely explored in the literature. Many authors have adopted Belbin's model as a foundational framework, despite receiving criticism from some researchers. Belbin's model continues to serve as a strong starting point for research in this field. However, due to the lack of a comprehensive schema that outlines the various approaches, we undertook this study to provide a basic understanding of the relationships among authors and their contributions. Overall, this study provides a comprehensive summary of authors involved in the development of team role typologies and taxonomies, providing a foundation for future research to validate and expand upon the identified author relationships.

We acknowledge that the results of this research should be considered as preliminary findings and require further validation and additional information from future studies. Our aim is to contribute to the existing knowledge and provide a starting point for more in-depth investigations.

Future research endeavours will centre on elucidating the intricate network of relationships between individual authors by conducting a thorough analysis of author and co-author associations within individual publications. As a natural progression from this thesis, we will utilize the preliminary list of authors developed here to facilitate the construction of a more comprehensive relationship analysis in subsequent studies. By delving deeper into the collaborative patterns and connections among authors, we aim to advance our understanding of the dynamic authorship landscape and its implications for knowledge dissemination.

Overall, our work serves as a stepping stone for advancing the understanding of team roles, typologies, and taxonomies, and we encourage further exploration and refinement of these concepts.

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