

# RESEARCH IN ORGANIZATIONAL CHANGE AND DEVELOPMENT

**Edited by** Debra A. Noumair,  
Abraham B. (Rami) Shani

RESEARCH IN ORGANIZATIONAL  
CHANGE AND DEVELOPMENT

**VOLUME 28**

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Series Editors: Abraham B. (Rami) Shani and  
Debra A. Noumair

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CHANGE AND DEVELOPMENT  
VOLUME 28

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DEVELOPMENT**

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INVESTOR IN PEOPLE

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# PREFACE

This volume of *Research in Organization Change and Development* continues the long-established tradition of providing a special platform for scholars, practitioners, and scholar-practitioners to share new thoughts provoking research-based insights. JAI Press published the first annual volume of *Research in Organization Change and Development* in 1987. Since 2009 and for the last 12 volumes, our partner in publishing ROCD, Emerald, has enhanced the quality of this special publication for scholars and practitioners.

Volume 28 of *Research in Organizational Change and Development* continues the practice of providing insightful chapters. Coupling the most recent period of COVID-19 and its impact on individuals, organizations, networks, and societies with the initial AOM major conference theme provided, “20/20: Broadening our Sights”, framed a wide terrain within which to explore organization development and change. Although not addressed directly, the invitation to use the theme, 20/20 Vision, to see more clearly management and organizations is apparent in the chapters in this volume. All contributions provide relevant insights which support broadening our sights for influencing our understanding of organization change and development.

Taking a 20/20 perspective while utilizing big data and social network analysis magnified the current state of the organization development field. The careful examination of renowned American women in the field explores the role of professional identity. The emerging nature of the new world of work suggests a fresh examination of the essence and role of communities that support interpersonal learning and enhance workers ability to thrive. The presence of technology and technological embeddedness is investigated as a change and development enabler. The variability of organizational resilience suggests an arena for organization development work that can broaden the impact of the field. The view of systems as networks of agreements and transfer of products, services, and communication provides a way to restore management in organization development and change management. Examination of change in tightly coupled systems magnifies the middle management role in organization development efforts. Last, while honest conversations have long been at the core of organization development and change work, strategic fitness processes present an approach that can broaden the ability to improve organization effectiveness and performance.

These contributions represent a commitment to the future. Many times over the years, we have been asked the question “Is there still a vibrant scholarly community in organization development?”. The answer is a resounding yes, as

those of you who have attended professional conferences like the Academy of Management, Organization Design Forum, or Organization Development Network will attest. While the field continues to evolve, the need for organizational change has never been more apparent than it is today, amid corruption, economic inequities, discrimination, continuing wars, and threats to the sustainability of the planet. It is no surprise to us that scholars in our field are stepping up to help address these challenges.

The field continues to evolve and increase our understanding of the complexities of organizational development and change. While we are smarter about it now than 70 years ago when the field began, we are still far from mastery or efficiency. We have models and principles to follow and a great deal of research to support what does and does not work. Yet, we are lacking a sure-fire formula for success, and it is our belief that due to the inherently human and emotional nature of change in organizational settings that no such formula will ever be found. That said we are improving the state of the art, as the papers in this volume attest. Some of these papers bring new perspectives to classic issues in the field such as actually including management in change management. Others explore new territories, such as the role of “technological embeddedness” as mechanisms to create more inclusive and sustainable change. From our editorial perspective, one of the most wonderful things about our work on this series is that it always brings surprises, whether in the form of a new way of thinking about old problems or a different way to think about opportunities we did not know existed. The series has been around long enough to substantiate the claim that we have published some true classics in the field of organization development and change. While it is too early to say whether the papers in Volume 28 contain new classics, there are certainly some significant and worthwhile pieces to read, which have the potential to become classics at some time in the future.

Leading off, Volume 28 is a paper by **Donna Ogle, Ram Tenkasi, and Bill Brock** that provides a comprehensive analysis of the field through the eyes of social media by using big data based on 5.7 million tweets extracted through Twitter’s API. Using social network analysis, the authors provide a comparative perspective on the state of organization development in relations to other management and organization studies fields. The authors advocate for greater specialization of organization development. **David Szabla, Elizabeth Shaffer, Ashlie Mouw, and Addelyne Turks**, building on the profiles of 17 of the women included in *The Palgrave Handbook of Organizational Change Thinkers*, perform a narrative analysis based upon the concepts and models prevalent in the literature on identity formation. By focusing on the professional identity formation of these women in the field, the authors suggest effective ways to prepare individuals to work in and advance the field.

**Gretchen Spreitzer, Pete Bacevice, Hilary Hendricks, and Lyndon Garrett**, while focusing on the emerging “coworking space,” pair recent research on human thriving with trends they observe in organizations’ efforts to create and maintain a sense of community. Such communities, they argue, provide

opportunities for interpersonal learning and vitality that can enhance thriving. **Johan Klaassen and Jan Löwstedt** examine the introduction processes of two separate IT systems in a school organization and their impact. The authors introduce the concept of “illusive embeddedness” and suggest a model of change processes that can enhance different levels of technological embeddedness in schools. **Orit Shani** conducted a comprehensive study of 1,132 educators in 98 schools, which explored the essence of organizational resilience. The author discovered significant relationships between three antecedents (social capital, team empowerment, goal interdependence) and organizational resilience; a positive significant relationship between organizational resilience and organizational functioning in crisis; and organizational resilience as a mediator between three of the antecedents (social capital, team empowerment, goal interdependence) and organizational functioning in crisis. Implications for policy makers, managers, and change leaders are explored.

**Laurie Ford and Jeffrey Ford**, the recipients of last year’s Pasmore and Woodman Award, reflecting on 30 years of collaboration, broaden our sight by sharing an operations research-based approach to representing systems as networks of agreements and transfers of products, services, and communications that they practice. They distinguish the network approach that is foundational to their work, with its implications for organization change and the “missing” elements of management. They conclude with reflections on restoring management to change management. **Rita Berggren, Johanna Envall Pregmark, Tobias Fredberg, and Björn Frössevi** investigated three retail organizations characterized as tightly coupled systems and examine the challenges that they faced in becoming adaptive and agile organizations. They identified three critical and central realignment mechanisms. The role of middle managers as facilitator of such mechanisms is explored. Last, **Michael Beer**, reflecting on the past 30 years of work, magnifies the role of honest conversation in individual and system transformation. Illustrating the Strategic Fitness Processes, the author argues that by creating a container for honest, collective, and public conversations, it enables leaders not naturally inclined or skilled in leading these conversations to learn how and potentially change their values and capabilities to do so.

From our editorial perspective, one of the best parts of our work on this series is that our collaborations with the authors always brings new learning, whether in the form of making history accessible and relevant, challenging assumptions, extending theory in creative ways, or integrating perspectives that heretofore have remained separate. The series has been around long enough to substantiate the claim that we have published some true classics in the field of organization change and development. We have also provided scholar-practitioners across career stage, sector, and geography with a platform to share their work and for colleagues to learn from each other in order to inform future collaborations. Moreover, the ROCD series has provided reliable sources for contributing to the ongoing development of organization change and development theory, research, and practice. It is our hope that through the

volume, you will consider your own thoughts and practice and possible contributions to the field as we are all dealing with COVID-19 and its impact, and contact us to suggest topics or themes for future volumes.

Debra A. Noumair  
Abraham B. (Rami) Shani  
Editors

# THE SOCIAL MEDIA PRESENCE OF ORGANIZATION DEVELOPMENT: A SOCIAL NETWORK ANALYSIS USING BIG DATA

Donna L. Ogle, Ramkrishnan (Ram) V. Tenkasi  
and William (Bart) B. Brock

## ABSTRACT

*Organization development is often mourned as stagnant or perhaps dead, but most of these declarations seem to be insular, being supported primarily by anecdotal or survey research among organization development scholars and practitioners. This exploratory study seeks a more objective understanding of the state of organization development by examining big data from the social media platform Twitter. Drawn from over 5.7 million tweets extracted through Twitter's Application Program Interface (API) during 2 months in 2018, this research approaches the state of organization development through a quantitative, abductive study utilizing social network analyses. Organization development is examined through its characteristics as a social network on Twitter and how it relates to and interacts with other familial networks from management and organization studies. Findings show that organization development is relatively inactive as a social network on Twitter, as compared to other familial networks, and the relationships between the organization development network and these familial networks tend to be ones of inequality. Organization development references familial networks much more than any of the familial networks reference organization development. This inequality in social media presence is particularly surprising since several of these familial networks were founded from the field and principles of organization development. We locate organization development's generalist status, as compared to familial networks' specialist status, as generating this interaction disparity*

*drawing on recent research that suggests specialized fields fare better in times of rapid change compared to generalist fields. We discuss the potential for greater specialization of organization development with a reemphasis on its process philosophy and focus.*

**Keywords:** Organization development and change; Big data; Social network analysis; Social media; Twitter; Data analytics; Generalist vs. specialist; Process approaches; Abductive reasoning; Rejuvenating ODC

## INTRODUCTION

It has become a cliché to mourn the stagnation, and perhaps death, of change in the field of change itself – organization development (OD). Some have attempted to understand its fall (Burke, 2018), meanwhile others seek to plot a new course (Bushe & Marshak, 2009; Cooperrider & Srivastva, 1987) or at least to trace its historical and current course (Cummings & Worley, 2015; Jick & Sturtevant, 2017). Some note that the spirit of OD is actually alive in spite of being declared dead (Bartunek & Woodman, 2012) while another set of views highlights the irony of OD’s substantial success but inadequate recognition (Golembiewski, Yoon, Kim, & Lee, 2005). Others bemoan the loss of status for OD compared to fields such as strategy, organization theory, and organizational behavior. Although OD enjoys earlier founding roots and was the progenitor of frameworks such as Contingency Theory, Organization Design, Group Dynamics, Team Effectiveness, and Socio-Technical Systems, these frameworks have been appropriated by newer disciplines in the larger family of management and organization studies (Tenkasi, 2018; Tenkasi & Zhang, 2018).

However, aside a few exceptions such as metaanalyses of the effectiveness of OD interventions that was empirically based (Robertson, Roberts, & Porras, 1993a; 1993b), most of the assessments of the state of the field have relied on introspective and speculative opinions from OD researchers and practitioners or survey research among them (Shull, Church, & Burke, 2014). Little, if any, research has been able to reflect on the state of OD from the position of the larger community of practice who constitute a broader social network of interested parties associated with a discipline such as OD and who form a distinct subnetwork among a constellation of broader management and organization studies networks.

The explosion of social media platforms such as Twitter affords us a unique opportunity to precisely engage in such an examination (Ogle, 2019). Social media has exploded in the past decade and has allowed the creation of instantaneous social networks and movements on various domains and arenas including organization development and other management and organizational disciplines (MOS). More importantly, social media platforms such as Twitter have enabled an inclusive culture with minimal entry barriers and free and open access to any individual from any part of the world who signs up to a social media platform. This is in contrast to traditional, nonelectronic social networks of yesteryears that were limited to unique and fee-based membership in

associations such as the ODC division of the AOM for researchers/academics and/or the OD network for practitioners. These organizations were for the most part regionally circumscribed.

Social media and globalization are two of the biggest trends in contemporary organizations (Church & Burke, 2017), and Twitter is an excellent reflection of current experience in global social media (Oulasvirta, Lehtonen, Kurvinen, & Raento, 2010) as almost half a billion tweets are written across the globe daily (Stricker, 2014). Twitter contemporaneously generates global big data about almost any topic including the topic of OD. We do acknowledge that Twitter users may not be a representative sample of OD scholars and practitioners, given that many may not participate in social media or may prefer platforms other than Twitter. This is clearly a limitation of our exploratory analyses. However, Twitter as one of the largest social media platforms globally allows us a reasonable chance to empirically examine questions that have plagued and divided the field in terms of the status of OD with differing assumptions regarding the contemporary relevance of the OD field (Bartunek & Woodman, 2012; Burke, 2018; Golembiewski et al., 2005; Tenkasi, 2018; Tenkasi & Zhang, 2018). Specifically, the nature of voluminous data available on Twitter enables us to examine the following research questions:

- Where does OD's social status stand relative to familial fields in the domain of management and organization studies (MOS) in terms of its social presence as defined by the volume of tweets on Twitter?
- What are the common topics discussed in OD on Twitter?
- What are the interrelationships between OD and other familial fields in the domain of management and organizational studies on Twitter? More specifically:
  - Which other MOS fields are most closely affiliated with OD?
  - What are the directions and strength of these relationships between OD and other MOS fields on Twitter?
  - What are the common topics in these interrelationships between OD and other MOS fields on Twitter?

There are three unique and pioneering contributions of this exploratory study: (1) assessing the relative social status of OD vis-a-vis other MOS fields in the Twitter social media space; (2) adding OD to the emerging trend of employing social media information to understand social phenomena, a very recent development in social studies (Kim & Hastak, 2018; Tremayne, 2014; Williams, McMurray, Kurz, & Lambert, 2015; Yang & Srinivasan, 2016); and (3) contributing methodologically in the use of social network analysis (SNA) to study Twitter network relationships between OD and other MOS fields, a method of analyses that has been underrepresented in OD research.<sup>1</sup>

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<sup>1</sup>The analyses presented here are an adaption of the doctoral dissertation titled *A Social Network Analysis of Organization Development on Social Media* (Ogle, 2019).

## BIG DATA THROUGH TWITTER

The term “big data” refers to extremely large datasets that may be structured or unstructured. Structured data is the type found in relational databases, but unstructured data, such as audio, images, video (Gandomi & Haider, 2015), and social media, is data not resident in fixed locations, and it is estimated to represent 80% of all big data (Freedman & Morrison, 2018). The amount of unstructured data is astronomical, the flow of social data is unending, and it approaches us as an avalanche (Beer, 2016). Our first step in dealing with this avalanche of data is to determine an accessible social media network for our research.

The largest social media networks include Twitter, Facebook, LinkedIn, Instagram, Tumblr, Reddit, and Snapchat. If we were to analyze all of them, we would find nearly 2 billion people interacting with each other (Baesens, Bapna, Marsden, Vanthienen, & Zhao, 2016). All of these interactions leave a communication trail that can be tracked and analyzed by researchers, as many social media platforms allow at least limited data retrieval. But some are more open to the general public than others with a number of platforms restricting access to their data. Twitter, in particular, tends to allow searchability in several different forms, and it is comparatively easier to research given its ease and openness of use. Its data are readily available – although not without restriction – through an Application Programming Interface (API) making it a rich platform for mining data and capturing social trends (George, Haas, & Pentland, 2014).

With its millions of tweets posted daily, Twitter is an ideal source of big data indicative of “what’s happening in the world and what people are talking about right now” (Twitter, 2019) as it invites users to “spark a global conversation” (Twitter, 2019). A form of microblogging or “making the ordinary visible to others” (Oulasvirta et al., 2010), Twitter provides tremendous advantages. “The ability to observe and measure micro, individual-level data on a comprehensive scale enables us to address grand problems on a societal level with deep policy implications that go beyond the confines of a single organization” (Agarwal & Dhar, 2014, p. 445). Its contemporary impact is clearly evident in the current US presidency and social movements such as #MeToo and its boasted 321 million Monthly Active Users (MAU) in 2018 with 21% of those users in the United States and 79% located internationally (Twitter, 2018). The exact number of tweets per day is somewhat elusive since Twitter has not publicly updated this number since December 2014 when it announced the creation of more than 500 million tweets per day (Stricker, 2014).

The availability of big data on Twitter allows opportunity for the study of organization development that cannot be replicated using traditional data collection methods (Baesens et al., 2016), and this unstructured “community data” must be examined (George et al., 2014). But how can we create meaning from these data? How do we gather intelligence from it (McAfee & Brynjolfsson, 2012)? Tweets are unstructured data – data that have no set formatting. However, tweets provide a strong advantage in gathering intelligence through the characteristic of inherent coding based on the tweet writer’s use of hashtags “#” before a

term to signify the tweet's characterization, thus helping us extract meaning from these unparsed data.

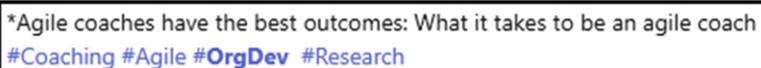
Hashtags have become an important means of communication in social media platforms. A key advantage of Twitter, and other social media platforms, is hashtag use. They are commonly used and can be a form of etiquette (Ingerson & Bruce, 2013) as tweet writers typically highlight what they are attempting to communicate by putting the “#” symbol before a phrase. This allows social media users to search topics (Brunns & Stieglitz, 2013) by clicking on a tweet's hashtag to link to all tweets using this hashtag. The hashtag becomes searchable talk or metadata embedded in text which is tied to social relationships and communities (Zappavigna, 2015) as well as being a source of textual data for analysis (George, Osinga, Lavie, & Scott, 2016).

Hashtags are recognized as providing intention or context. Scott (2015) notes that “the information in the hashtag is functioning as a guide to the reader's inferential processes when interpreting the utterance” (Scott, 2015, p. 13). In other words, the user can add value to the tweet beyond the stated tweet message. A tweet writer might include the hashtag #OrgDev to highlight that this tweet refers to organization development, even though the text of the tweet may not make this clear. For example, in Fig. 1, the tweet writer mentions agile coaches in the text of the tweet and also uses the hashtags #Coaching and #Agile. This writer relates OD to the concept of agile coaching in developing effective organizations, so he adds the hashtag #OrgDev.

This research focuses on data coding through the exclusive use of hashtags due to their intrinsic coding characteristic. Coding is naturally inherent within tweets because users are intentional in what they mark with the # symbol and the hashtag provides a natural classification of terms that may be compared within and between social networks. Although one could pull plain text from a tweet, the work is highly subjective, while the hashtag gives a rapid glimpse into the specific intention of the tweet author.

## SOCIAL NETWORK ANALYSIS

A key characteristic of social media data is that it is social. Individuals may self-identify through their expressions, but they may also interact with others and naturally form networks. These naturally occurring social networks have academic value because they provide data about social processes that may be difficult to research in any other way (Smith et al., 2009). The element of naturally occurring networks is prevalent on Twitter as evident from users' frequent replies to other tweets, retweeting of other tweets, and “liking” or quoting another's



\*Agile coaches have the best outcomes: What it takes to be an agile coach  
#Coaching #Agile #OrgDev #Research

Fig. 1. Example of Hashtag Use.

tweet. These actions help to intensify the message of the original tweet while also establishing the actor's self-identification with some group or cause (i.e., network). Tweet users not only share content with others but also build a relationship with others (Ahn & Park, 2015).

Given the networking characteristic of social media, SNA seems a natural framework for examining Twitter data and deriving meaningful insights from this big data as exhorted by Church and Dutta (2013). SNA utilizes sociometric data to determine the relationships between units or groups (Tichy, Tushman, & Fombrun, 1979) and examines "...the attractions and repulsions of members of groups" (Kerlinger & Lee, 2000, p. 742). Indeed, SNA would seem the perfect vehicle for understanding networks in social media.

The field of SNA far predates the advent of social media, having originated in the 1930s (Scott, 2017), but recently SNA has been used with Twitter to track disasters (Kim & Hastak, 2018), politics, and social movements such as Occupy Wall Street (Tremayne, 2014), climate change (Williams et al., 2015), and even happiness (Yang & Srinivasan, 2016). SNA can be defined as "a broad approach to sociological analysis and a set of methodological techniques that aim to describe and explore the patterns apparent in the social relationships that individuals and groups form with each other" (Scott, 2017, p. 2). At its roots, SNA is a social science (Borgatti, Everett, & Johnson, 2018) based partially on Lewin's group theory research (Barnes & Harary, 1983; Scott, 2017), and it is a strong lens for examining OD (Mohrman, Tenkasi, & Mohrman Jr, 2003; Tenkasi & Chesmore, 2003) through social media – an unexplored trajectory in understanding the current state of OD.

SNA can be conducted through the framework of structure-based analytics (Gandomi & Haider, 2015) with the social network's structure being represented as a series of nodes, with edges or arrows connecting the nodes (Clauset, Newman, & Moore, 2004). It is related to mathematical graph theory (Barnes & Harary, 1983), which has been applied to group interactions (Scott, 2017), and deals with actors and the relationships among actors (Grunspan, Wiggins, & Goodreau, 2014). Graphically, actors become nodes and relationships among nodes become the edges/arrows. These nodes and edges are then represented by points and lines referred to in SNA as a graph (Barnes & Harary, 1983). In many cases, nodes are individuals, but nodes may also be part of a system such as teams, companies, species (Borgatti et al., 2018), or even computer networks (Clauset et al., 2004). This ability to provide graphical visualization of social network activity allows us to show data visually that may be hard to understand numerically (Borgatti et al., 2018), and graphical visualization is frequently used in SNA (Borgatti et al., 2018). In fact, these visualizations are often the first step in applying SNA (Grunspan et al., 2014) to help demonstrate the relationships among nodes.

## METHODOLOGY

Our research methodology seeks to evaluate big data extracted from tweets through an SNA framework using quantitative analyses followed by abductive

reasoning (Golden-Biddle, 2019; Peirce, 1867; Shani, Coghlan, & Alexander, 2020) to make sense of our findings. Quantitative analysis is accomplished in our research through the use of graphing techniques to reveal actors and relationships among actors utilizing tweets coded through the intrinsic self-coding of hashtags.

We explicitly employ abductive reasoning as a research methodology in this limited data environment (Golden-Biddle, 2019; Shani et al., 2020). Our limited data of 5.7 million tweets examine the association between three prominent OD hashtags and 34 associated prominent MOS field hashtags. Our investigation of network associations is specific to the network associations between the three OD hashtags and the 34 other prominent MOS field hashtags; it does not include an investigation of the content of individual OD tweets or related MOS tweets. This is a clear limitation of our study in allowing us to engage in inductive inferences. Given this inherent limitation, we rely on abductive reasoning, initially conceived by Peirce (Peirce, 1867, 1997), that provides us the most effective means of developing speculative inferences from our Twitter extracted data that are both emergent and incomplete (Shani et al., 2020).

Deductive reasoning starts with the assertion of a general rule and proceeds from there to make specific predictions in the form of hypotheses. It is a priori. Inductive reasoning in contrast moves from the specific to the general, and cogent inductive reasoning carries an underlying assumption that the evidence that sheds light on the phenomenon is fairly complete (Copi, Cohen, & Flage, 2006). It is posteriori, and its explanations are limited to the data observed. Abductive reasoning begins with an incomplete set of observations from which it arrives at the likeliest possible explanation for those observations. The conclusions are accepted as invariably uncertain. There is no finitude, and explanations of the data are speculative.

While abductive reasoning may provide weaker causal inference than do deductive and inductive reasoning, it is more powerful in the situation of limited data. Its speculations can be creative, intuitive, and even revolutionary as in Einstein's abductive imagination and visualization on the time-space dynamics from limited observations of moving trains and falling elevators (Magnani, 2014). Abductive reasoning is practical through its application of inference to the best explanation by fitting exploratory hypotheses to a set of observations and determining the likeliest possible explanation for these observations (Lipton, 2001). The situations of incomplete data and practical application of inference to the best explanation fit well to both our data and the exploratory nature of our research questions.

In summary we used a combination of SNA and abductive reasoning to explore the research questions below and explain our findings:

- Where does OD's social status stand relative to familial fields in the domain of management and organization studies (MOS) in terms of its social presence as defined by the volume of tweets on Twitter?
- What are the common topics discussed in OD on Twitter?

- What are the interrelationships between OD and other familial fields in the domain of management and organizational studies on Twitter? More specifically:
  - Which other MOS fields are most closely affiliated with OD?
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  - What are the common topics in these inter-relationships between OD and other MOS fields on Twitter?

### *Retrieving Tweets*

#### *Organization Development Tweets*

To address each of our research questions, the first step was to retrieve relevant tweets. [Fig. 2](#) shows the first step in the procedure beginning with the retrieval of organization development tweets.

We first determined what constitutes an OD tweet (i.e., OD hashtag) through trial-and-error searching of various hashtags. First, OD data was searched using the primary researcher's Twitter account to identify the most frequently used hashtags in OD. Only those hashtags specific to organization development were used: #OrgDev, #OrganizationDevelopment, and #OrganisationDevelopment. These hashtags have the advantage of also being short hand for organizational development, organisation development, and organisational development. Sometimes the meaning of a hashtag does not make sense to those outside the community ([Zappavigna, 2015](#)), but in this case #OrgDev seems to be widely used to represent OD. Since hashtags on Twitter are not case-specific, any capitalization can be used; thus, #ORGDEV is the same as #orgdev in Twitter. While we might intuitively consider #OD as an organization development hashtag, its meaning appears to be different in Twitter and not primarily associated with the field. We discuss this issue more fully in our analysis of results. Although one would expect #ODC to be a hashtag given that the OD field in contemporary times is often referred to as Organization Development and Change, which symbolizes both the ODC division at the Academy of Management and also the official title of this Annual Research Volume series, ROCD, we surprisingly found no tweets during our time period that used the hashtag #ODC to reference organization development and change.

To access the Twitter data, registration with the Twitter Application Programming Interface (API) was required. For the data methods used in this paper, Twitter allowed collection of only approximately 1 week to 10 days' worth of historic tweets in a single run. We collected these tweets via computer code written using the Python computer language due to the ease with which it can interface with social media and because it is one of the preferred platforms for data analytics. The Python program created a formatted comma-separated values (CSV) file for direct input into [Excel 2016](#) and SPSS. Using this Python program, individual fields pertaining to the three OD-related hashtags were pulled including the tweet information, user information, and the 280-character extended tweet text.