SUBMISSION TYPE

Poster

TITLE

A Random Walk With Requests For Help

ABSTRACT

I examine the movement of help requests, or the fluctuations in the prompts employees receive asking them for assistance. Time series data were obtained capturing request trajectories, with series spanning from 500 to 3000 days in length. Results suggested that a majority of the series were consistent with random walks.

PRESS PARAGRAPH

What causes an employee to frequently volunteer for additional work? Our intuition says that the cause must be something unique about her – a motive, personality trait, or her momentary enthusiasm. So it is with organizational research: the literature on correlates of why someone responds with help has focused heavily on individual characteristics, such as affect, motives, personality, and justice perceptions. What is seldom acknowledged is that requests, or prompts signaling to an employee that a cooperative act can be performed, may be unequal across employees. This preliminary research compliments prior, person-oriented research by examining the movement of requests over time. Time series data capturing pleas for assistance are analyzed and discussed as they relate to citizenship.

WORD COUNT

2830

Employees that exhibit frequent, high-levels of OCBs are labeled “good soldiers” or “extra-milers” in the literature (Li, Zhao, Walter, Zhang, & Yu, 2015; Methot, Lepak, Shipp, & Boswell, 2017), and researchers have identified a number of predictors of this behavior – many of which are individual characteristics. These include prosocial motives and personality (Bellairs & Halbesleben, 2018; Grant, 2008; Penner, Midili, & Kegelmeyer, 1997), impression management (Grant & Mayer, 2009), one’s propensity to be concerned for others (Meglino & Korsgaard, 2004), job satisfaction, perceived fairness, and organizational commitment (Organ & Ryan, 1995), perceptions of trust (Moorman, Brower, & Grover, 2018), fit (Kristof-Brown, Li, & Schneider, 2018), leader fairness (Piccolog, Buengeler, & Judge, 2018), and interaction quality with colleagues (Bolino, Hsiung, Harvey, & LePine, 2015), how employees appraise goals and pressures to perform (Mitchell, Greenbaum, Vogel, Mawritz, & Keating, 2019), their level of engagement and mindfulness (Hafenbrack et al., 2019; Wang, Law, Zhang, Li, & Liang, 2019), and their perceptions of ostracism (Lance Ferris et al., 2019). Indeed, Bolino (1999) and Bolino, Turnley, and Bloodgood (2002) state that there is a consensus that OCBs stem from dispositions, motivation, and fairness perceptions.

What is seldom acknowledged is that differences across employees in their helping behavior may also reflect differences in the number of requests that they receive asking them for assistance. To the extent that incoming requests vary across employees, a citizenship champion could emerge even among those who are identical in character. The purpose of this study was to document the movement of employee help requests over time.

### Requests Over Time & Sustained Lead

A request is defined as a notification that an act of assistance can be performed. Consider a few examples: A Professor receives an email from a colleague asking if she can substitute for an undergraduate course; An employee hears an announcement from a manager that volunteers are needed for an upcoming assignment. Moreover, any agent may experience repeated prompts over the course of a week. On Monday, a Professor may receive an email asking for assistance teaching a class. On Tuesday, she receives two more emails about optional meetings in her department (attending optional meetings is one commonly studied indicator of OCB). On Wednesday, a former graduate student, who is now a faculty member at a different school, asks for a letter of recommendation. On some days the Professor has a large stock of help requests whereas on others she has few, if any.

Requests for help are related to ideas elsewhere. Entrepreneurs respond to opportunities to enter the market (Short, Ketchen, Shook, & Ireland, 2010). Employees enact job performance after being triggered by what Stewart and Nandkeolyar (2006; 2007) call situation enabling factors. Safety reminders stimulate safety behaviors (Komaki, Barwick, & Scott, 1978). Questions that interrupt a training intervention and prompt self-regulatory activity improve learning and performance (Sitzmann & Ely, 2010). Prompts are also examined in selection (Levashina, Hartwell, Morgeson, & Campion, 2014), forensic interviews (Sternberg, Lamb, Orbach, Esplin, & Mitchell, 2001), and in event-sampling methodology where they are used to improve participant survey responding (Laurenceau & Bolger, 2005; Shiffman, 2009).

What is missing in these other areas that becomes relevant as we consider requests over time is a discussion of sustained lead: some employees may consistently receive greater or fewer requests than others. The notion of sustained lead is well-known in literatures focusing on stocks other than requests (e.g., finance, strategy, mechanics; Denrell, 2004; Akimoto, 2008; Henderson et al., 2012; Shreve, 2004). It has not received attention in the citizenship space because studies do not often capture how requests accumulate over time (Ehrhart, 2018). Instead, most examine how to appropriately phrase a single, one-time plea (Cain et al., 2014), leaving the idea of a stockpile unspecified. An employee’s pool of requests may change or stay the same as she moves throughout her week. Due to this fluidity, the size of her pool may be larger or smaller than her colleagues. Larger on some days; smaller on others, or vice versa. Sustained lead refers to a situation in which the rank order of a set of stocks remains stable over time. Applied to help requests, this would mean that employees with the most requests at time also tend to be the employees with the most requests at + 1, + 2, and so on. It captures the stability of relative positions, and it is worth considering for the following reason. If sustained lead occurs with requests, it establishes a situation where some employees continually experience more requests than others. It does not guarantee action but creates an environment with unequal opportunity. Recall that the core idea underlying extra milers/good soldiers is that some employees repeatedly exhibit more citizenship than their colleagues. Sustained lead may be one factor gently pushing in that direction. Of course, it also depends on how employees respond.

There are two schools of thought regarding the mechanisms of sustained lead: the random and the systematic.

#### *The Random School of Thought*

Probability theory and stochastics (Basu, 2003; Jaynes & Bretthorst, 2003; Lévy, 1940) offer two features that are sufficient to yield sustained lead whenever they occur in tandem. These include inertia and randomness.

**Inertia**. Inertia refers to the self-similarity of a variable from one moment to the next (Cronin & Vancouver, 2020). It can be thought of as conservation or persistence in the sense that the state retains its condition until something changes it. When an employee accumulates help requests with inertia this means that he or she has a pool or store of help requests – three, for example – and this number is self-similar such that it carries-over from day to day. Similarly, when help requests are removed from the pool – which could occur, for instance, after she or someone else provides help and the request is resolved or when a deadline passes and help is no longer required – then it decreases by whatever amount was withdrawn. But removing a request does not drive the pool to zero. Instead, whatever amount was removed is subtracted from the total in such a way that the pool has inertia/memory – the amount changes from where it was at the immediately prior time point; it does not arbitrarily swing to zero.

**Randomness**. The second feature is the extent to which requests compile randomly. The idea that chance has a stronger effect on people’s lives than given credit for is expressed in social theory (Bandura, 1982; Dew, 2009; Weiss & Cropanzano, 1996), probability theory and mathematics (Dobrow, 2016), and among popular press (Mlodinow, 2008; Taleb, 2005). In the current research, the notion of randomness is drawn from the chance perspectives presented in Denrell, Fang, and Liu (2014) and Liu and de Rond (2016). An employee that accumulates requests randomly means that the likelihood of receiving a request or having a request removed is pulled from a probability distribution such that both are equally likely.

Probability theory demonstrates that a set of trajectories (e.g., requests over time for multiple employees) exhibiting both inertia and randomness generates sustained lead. In simple terms, there is a high probability that one employee will consistently have more requests than another if requests compile randomly with inertia. If inertia is not present, however, sustained lead does not occur (Table 1).

#### *The Systematic School of Thought*

Other theories offer non-random sources of sustained lead. The principle of cumulative advantage (Aguinis, O’Boyle, Gonzalez-Mulé, & Joo, 2016) suggests that small benefits received during early periods fuel large gaps between “haves” and “have nots” at later stages. The mechanisms that create lasting advantages are numerous, and they include incumbency effects (Saloner, Shepard, & Podolny, 2001), path dependence (Arthur, 1989), first-mover-effects (Lieberman & Montgomery, 1988), switch costs (Klemperer, 1995), resource developments (Nelson & Winter, 1982; Dosi, 1988), lucky early detections (Barney, 1986), productivity multiplicity and ceilings (Aguinis et al., 2016), network effects (Gnutzmann, 2008), and Matthew effects (e.g., Vancouver, Li, Weinhardt, Steel, & Purl, 2016). Due to any combination of these features, employees may exhibit sustained differences in their resource pools (such as requests for help). Social capital theory (Adler & Kwon, 2002; Galunic, Ertug, & Gargiulo, 2012; Nahapiet & Ghoshal, 1998) also captures the idea of preserved differences in pools. Some individuals accrue large stores of social capital and are therefore differentially exposed to a whole host of aspects, some of which include information, social support, direct and indirect contacts, cutting-edge technology, trust, diverse perspectives, and unique communities (Hansen, 1999, Inkpen & Tsang, 2005; Reinholt, Pedersen, & Foss, 2011; Seibert, Kraimer, & Liden, 2001). Due to this exposure, then, employees with greater social capital may persistently receive more requests than others.

This research focuses on the random perspective for the following reason: randomness can be an appropriate perspective at a given level of analysis. The main aspect of this research is the concept of a help request trajectory: a time-series representing one’s store of requests that can fluctuate up or down at each step. Although little research exists on these specific trajectories, there is a massive literature showing that randomness may appear whenever studies examine accumulating trajectories. In economics, financial and visitor arrival trajectories exhibit randomness (Bhattacharya & Narayan, 2005; Cooper, 1982). In biology, foraging and movement trajectories exhibit randomness (Hill & Häder, 1997). In psychology, memory search and decision trajectories exhibit randomness (Hills, Jones, & Todd, 2012; Reike & Schwarz, 2016). None necessarily imply a fundamentally stochastic world, only that random movement exists at the level of an observed trajectory. Many trajectories captured in time-series data manifest random patterns – the same may occur for help requests. This does not mean that if we were to zoom-in on a lower level of analysis that the elements of the system would be random. They may not be. Everything underneath could in fact be non-random. The current research, though, is at a higher level of analysis focusing on the trajectory itself. At this zoomed-out level of analysis (Zaheer, Albert, & Zaheer, 1999), trajectories often express random movements. That is, despite non-random origins an observed trajectory at a higher level of analysis can fluctuate randomly from one time point to the next. A pool of help requests is one such “higher level” trajectory. For this reason, randomness isn’t something to be shunned but understood. By taking the random perspective, therefore, I am not suggesting that received help requests are fundamentally random but that random movement may exist at the level of an observed trajectory. To the extent that random fluctuations appear in data, randomness is a meaningful perspective. Preliminary evidence reported below addresses whether there is evidence of randomness in request trajectories.

The notion that trajectories with inertia and randomness exhibit sustained lead was originally expressed using Paul Levy’s arcsine law but it is now commonly referred to as the law of long leads in random processes. Sustained leads have been examined in studies of organizational age (Levinthal, 1991), resource accumulation (Denrell, 2004), and firm performance (Henderson et al., 2012). The current article continues this research by considering requests for help as stocks that may rise or fall over time, potentially exhibiting sustained lead.

**Study**

To assess whether help request trajectories (at least some of the time) exhibit random movement, I collected archival data from the Internet. This pilot adhered to the theory-driven web scraping approach proposed by Landers, Brusso, Cavanaugh, and Collmus (2016). In this pilot study, the research question was, Do help request trajectories display inertia and randomness? The planned analysis was to examine the presence or absence of these features in time-series data using unit root tests (described later). Unit root tests require data with many time points, therefore I selected GitHub as a data platform because it contains indicators of requests over long periods of time.

## **Data Sources**

Issues on GitHub Repositories – Non-Academic. Data were collected from GitHub repositories created by software developers. GitHub is an open source website that allows users to store, manage, share, and collaborate on projects (repositories) and, although most use it for code, it can also be used for other types of documents such as Word files. The data I collected are known as repository “issues.” When an individual posts a repository/project, other users can then download and use the code that she/he created. If other users want to ask questions, request features, or report bugs, they can post an issue on the focal individual’s repository, which then automatically triggers a notification. The repositories I selected were posted by single users, rather than groups, to ensure that issues were targeted at one individual. For a given repository owned by a single user, I collected all issues from when the repo was first created until July 1st, 2020. This process was repeated for 26 different users. Observations occurred at the day level.

Issues on GitHub Repositories – Academic. I also collected data from GitHub repositories created by academics. University faculty often use GitHub as a version control system when writing documents, as a platform to share, monitor, and adjust tools that they develop, and as a resource for downloading data science software. Similar to above, I collected issues across 9 different repositories, each maintained by a single academic.

For each of the 35 data sets, a help request was operationalized as an issue. For each issue, I collected (a) the date it was posted and (b) when it was removed or resolved, if ever. Issues can be removed or resolved on GitHub due any number of reasons. For example, the individual who posts it may figure out the problem on his or her own. If this happens, he or she can follow-up the original issue with another notification. It is also possible for the repository owner to respond and then close the issue. Alternatively, a “bystander” – someone who did not post the issue nor did he or she create the repo but happened to come across the public system of notifications for any number of reasons (one being that he or she uses the code within the repository and so actively follows it) – can send his or her own response. For any or all of these reasons, requests can be resolved. Of course, it is also possible for them to lay dormant indefinitely.

## **Analysis**

The final data structure included 35 trajectories, each representing the number of received help requests (issues) across time for a single user. Each time-series represented a stock of help requests, with greater values at *t* indicating more requests and lower values indicating fewer requests. For each data set, the pilot research question regarding randomness and inertia was evaluated by assessing whether the series contained a unit root. Unit root tests can be used to examine the presence or absence of random walks in time-series (for a larger discussion see Kuljanin, Braun, & DeShon, 2011). What matters for my purposes is that random walks contain both inertia and random movement, so when a unit root test cannot reject the presence of a random walk then there is evidence of both inertia and random fluctuations. The most widely used statistic to evaluate the presence of random walks in time-series data is the augmented Dickey-Fuller (ADF; Dickey & Fuller, 1979) test.

## **Results**

Descriptives and ADF results are reported in Table 2. The shortest series included data across 533 days and began in January of 2019. The longest series included data across 3347 days and began in May 2011. The third and fourth columns of Table 2, respectively, report the Dickey-Fuller test statistic and *p*-value for each of the 35 series. Eighty percent of the help-request trajectories could not reject the presence of a random walk. Randomness and inertia, therefore, exist at least some of the time in the fluctuations one observes among GitHub issues.

*Exploratory Analysis.* I also explored whether the data exhibited the law of long leads. The law of long leads, also known as the arcsine law, stems from probability theory. Mathematically, it states that the proportion of time a one-dimensional random walk is positive follows an arcsine distribution. Conceptually, it says that when two units – i.e., people, players of a game, organizations, cells, particles, etc. – move as random walks, most of the sample paths leave one unit in the lead. Few paths manifest walks which alternate leads. This law, therefore, captures the mathematics underlying what is more commonly known as sustained lead. The theoretical distribution created from numerical analysis follows a U-shape, with the number of periods *n* on the *x*-axis and the probability of spending *n* periods in the lead on the *y*-axis. In the context of the current data structure, this law would mean that one series should spend most periods as the leading request pool in bi-user comparisons. Indeed, evaluating bi-user comparisons shows that the arcsine law manifests in my data. For a majority of the bi-user comparisons, the greatest probability is that a series *i* spends 0 or all periods as the leading pool. See Figure 1 for a visualization. Conceptually, what this analysis shows is that the data exhibit sustained lead in request pools.

**Table 1**

Stochastic requests for help yield different outcomes depending on whether they retain inertia.

|  |  |
| --- | --- |
| **Inertia** | **No Inertia** |
| Sustained Lead   * Leading help request stores persist | No Sustained Lead   * Leading help request stores do not persist |

**Table 2**

Unit root tests and descriptives for each issue time series.

| Repo ID | Start Date | Length (Days) | Dickey-Fuller | P-Value | Unit Root |
| --- | --- | --- | --- | --- | --- |
| 1 | 2017-03-06 | 1239 | -3.65 | 0.03 | No |
| 2 | 2014-07-31 | 2188 | -2.25 | 0.47 | Yes |
| 3 | 2013-11-22 | 2439 | 0.04 | 0.99 | Yes |
| 4 | 2017-07-25 | 1098 | -2.58 | 0.33 | Yes |
| 5 | 2013-04-15 | 2660 | -3.93 | 0.01 | No |
| 6 | 2014-03-10 | 2331 | -6.78 | 0.01 | No |
| 7 | 2013-12-06 | 2425 | 0.44 | 0.99 | Yes |
| 8 | 2017-10-12 | 1019 | -2.79 | 0.24 | Yes |
| 9 | 2015-04-24 | 1921 | -0.92 | 0.95 | Yes |
| 10 | 2014-01-08 | 2392 | -3.35 | 0.06 | Yes |
| 11 | 2012-02-28 | 3072 | -2.90 | 0.20 | Yes |
| 12 | 2014-10-02 | 2125 | -2.33 | 0.44 | Yes |
| 13 | 2013-07-04 | 2580 | -3.64 | 0.03 | No |
| 14 | 2016-02-16 | 1623 | -6.15 | 0.01 | No |
| 15 | 2011-09-22 | 3231 | -1.79 | 0.67 | Yes |
| 16 | 2015-02-06 | 1998 | -2.75 | 0.26 | Yes |
| 17 | 2017-02-25 | 1248 | -3.06 | 0.13 | Yes |
| 18 | 2015-03-13 | 1963 | -2.84 | 0.22 | Yes |
| 19 | 2015-12-11 | 1690 | -1.86 | 0.64 | Yes |
| 20 | 2018-08-24 | 703 | -2.70 | 0.28 | Yes |
| 21 | 2016-02-22 | 1617 | -2.55 | 0.34 | Yes |
| 22 | 2016-12-07 | 1328 | -2.18 | 0.50 | Yes |
| 23 | 2015-11-09 | 1722 | -3.98 | 0.01 | No |
| 24 | 2015-04-17 | 1928 | -2.16 | 0.51 | Yes |
| 25 | 2016-12-16 | 1319 | -2.58 | 0.33 | Yes |
| 26 | 2014-12-29 | 2037 | -0.76 | 0.97 | Yes |
| 27 | 2013-06-11 | 2603 | -0.54 | 0.98 | Yes |
| 28 | 2019-01-15 | 559 | -2.59 | 0.33 | Yes |
| 29 | 2015-03-10 | 1966 | -1.89 | 0.63 | Yes |
| 30 | 2015-03-14 | 1962 | -2.47 | 0.38 | Yes |
| 31 | 2016-05-16 | 1533 | -1.88 | 0.63 | Yes |
| 32 | 2015-03-20 | 1956 | -2.45 | 0.39 | Yes |
| 33 | 2011-05-03 | 3373 | -4.70 | 0.01 | No |
| 34 | 2017-05-19 | 1165 | -1.40 | 0.83 | Yes |
| 35 | 2018-06-18 | 770 | -2.20 | 0.50 | Yes |

*Note*. 80% of series contained a unit root.

## **Figure 1**

## Law of Long Leads

The Theoretical Distribution

A screenshot of a cell phone

Description automatically generated

The Observed, Empirical Distribution

A picture containing drawing, clock

Description automatically generated

# References

Aguinis, H., O'Boyle Jr, E., Gonzalez‐Mulé, E., & Joo, H. (2016). Cumulative advantage: Conductors and insulators of heavy‐tailed productivity distributions and productivity stars. *Personnel Psychology, 69*(1), 3-66.

Alvarez, F., Atkeson, A., & Kehoe, P. J. (2007). If exchange rates are random walks, then almost everything we say about monetary policy is wrong. *American Economic Review*, *97*(2), 339–345.

Arthur, W. B. (1989). Competing technologies, increasing returns, and lock-in by historical events. *The economic journal, 99*(394), 116-131.

Bamberger, P. (2009). Employee help-seeking: Antecedents, consequences and new insights for future research. *Research in personnel and human resources management*, *28*(1), 49-98.

Barney, J. B. (1986). Strategic factor markets: Expectations, luck, and business strategy. *Management science, 32*(10), 1231-1241.

Bateman, T. S., & Organ, D. W. (1983). Job satisfaction and the good soldier: The relationship between affect and employee “citizenship”. *Academy of Management Journal*, *26*(4), 587–595.

Beal, D. J., Weiss, H. M., Barros, E., & MacDermid, S. M. (2005). An episodic process model of affective influences on performance. *Journal of Applied Psychology*, *90*(6), 1054.

Bell, B. S., Tannenbaum, S. I., Ford, J. K., Noe, R. A., & Kraiger, K. (2017). 100 years of training and development research: What we know and where we should go. *Journal of Applied Psychology, 102*(3), 305.

Bellairs, T., & Halbesleben, J. (2018). What Are the Motives for Employees to Exhibit Citizenship Behaviors? A Review of Prosocial and Instrumental Predictors of Organizational Citizenship Behavior. In P. M. Podsakoff, S. B. Mackenzie, and N. P. Podsakoff (Eds), *The Oxford Handbook of Organizational Citizenship Behavior* (pp. 239-254). Oxford: Oxford University Press.

Bergeron, D. M. (2007). The potential paradox of organizational citizenship behavior: Good citizens at what cost?. *Academy of Management review*, *32*(4), 1078-1095.

Bergeron, D. M., Shipp, A. J., Rosen, B., & Furst, S. A. (2013). Organizational citizenship behavior and career outcomes: The cost of being a good citizen. *Journal of Management, 39*(4), 958-984.

Blumberg, M., & Pringle, C. D. (1982). The missing opportunity in organizational research: Some implications for a theory of work performance. *Academy of Management Review*, *7*(4), 560–569.

Bolino, M. C. (1999). Citizenship and impression management: Good soldiers or good actors? *Academy of Management Review*, *24*(1), 82–98.

Bolino, M. C., Harvey, J., & Bachrach, D. G. (2012). A self-regulation approach to understanding citizenship behavior in organizations. *Organizational Behavior and Human Decision Processes*, *119*(1), 126–139.

Bolino, M. C., Hsiung, H.-H., Harvey, J., & LePine, J. A. (2015). “Well, I’m tired of tryin’!” Organizational citizenship behavior and citizenship fatigue. *Journal of Applied Psychology*, *100*(1), 56.

Bolino, M. C., Klotz, A. C., Turnley, W. H., Podsakoff, P., MacKenzie, S., & Podsakoff, N. (2018). The unintended consequences of organizational citizenship behaviors for employees, teams, and organizations. In P. M. Podsakoff, S. B. Mackenzie, and N. P. Podsakoff (Eds), *The Oxford Handbook of Organizational Citizenship Behavior* (pp. 185-202). Oxford: Oxford University Press.

Bolino, M. C., Turnley, W. H., & Bloodgood, J. M. (2002). Citizenship behavior and the creation of social capital in organizations. *Academy of Management Review*, *27*(4), 505–522.

Bollen, K., & Lennox, R. (1991). Conventional wisdom on measurement: A structural equation perspective. *Psychological bulletin*, *110*(2), 305.

Braitenberg, V. (1986). *Vehicles: Experiments in synthetic psychology*. MIT press.

Bramson, M., & Lebowitz, J. L. (1991). Asymptotic behavior of densities for two-particle annihilating random walks. *Journal of Statistical Physics*, *62*(1-2), 297–372.

Braun, M. T., Kuljanin, G., & DeShon, R. P. (2013). Spurious Results in the Analysis of Longitudinal Data in Organizational Research. *Organizational Research Methods*, *16*(2), 302–330. doi:[10.1177/1094428112469668](https://doi.org/10.1177/1094428112469668)

Campbell, D. T. (1958). Common fate, similarity, and other indices of the status of aggregates of persons as social entities. *Behavioral science, 3*(1), 14-25.

Carpini, J. A., & Parker, S. K. (2018). The Bigger Picture: How Organizational Citizenship Behaviors Fit Within a Broader Conceptualization of Work Performance. In P. M. Podsakoff, S. B. Mackenzie, and N. P. Podsakoff (Eds), *The Oxford Handbook of Organizational Citizenship Behavior* (pp. 239-254). Oxford: Oxford University Press.

Chiang, C. L. (1980). *An introduction to stochastic processes and their applications*. New York: RE Krieger Publishing Company.

Christian, M. S., Eisenkraft, N., & Kapadia, C. (2015). Dynamic associations among somatic complaints, human energy, and discretionary behaviors: Experiences with pain fluctuations at work. *Administrative Science Quarterly*, *60*(1), 66–102.

Clarke, R. D. (1946). An application of the Poisson distribution. *Journal of the Institute of Actuaries*, *72*(3), 481-481.

Clegg, C., & Spencer, C. (2007). A circular and dynamic model of the process of job design. *Journal of Occupational and Organizational Psychology*, *80*(2), 321-339.

Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological bulletin*, *52*(4), 281.

Cronin, M. A., and Vancouver, J. B. (2018). The only constant is change: expanding theory by incorporating dynamic properties into one’s models. In S. E. Humphrey & J. M. LeBreton (Eds.), *The Handbook of Multilevel Theory, Measurement, and Analysis* (pp. 89-114). Washington, DC: American Psychological Association.

Dalal, R. S. (2005). A meta-analysis of the relationship between organizational citizenship behavior and counterproductive work behavior. *Journal of Applied Psychology*, *90*(6), 1241.

Dalal, R. S., & Carpenter, N. (2018). The Other Side of the Coin? Similarities and Differences Between Organizational Citizenship Behavior and Counterproductive Work Behavior. In P. M. Podsakoff, S. B. Mackenzie, and N. P. Podsakoff (Eds), *The Oxford Handbook of Organizational Citizenship Behavior* (pp. 69-90). Oxford: Oxford University Press.

Dalal, R. S., Lam, H., Weiss, H. M., Welch, E. R., & Hulin, C. L. (2009). A within-person approach to work behavior and performance: Concurrent and lagged citizenship-counterproductivity associations, and dynamic relationships with affect and overall job performance. *Academy of Management Journal*, *52*(5), 1051–1066.

Dansereau Jr, F., Graen, G., & Haga, W. J. (1975). A vertical dyad linkage approach to leadership within formal organizations: A longitudinal investigation of the role making process. *Organizational behavior and human performance*, *13*(1), 46-78.

Denrell, J. (2004). Random walks and sustained competitive advantage. *Management Science*, *50*(7), 922–934.

DeShon, R. P. (2012). Multivariate dynamics in organizational science. *The Oxford Handbook of Organizational Psychology*, *1*, 117–142.

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, *74*(366a), 427–431.

Dishop, C. R. (2019). A simple, dynamic extension of temporal motivation theory. *The Journal of Mathematical Sociology*, 1–16.

Dishop, C. R., Braun, M. T., Kuljanin, G. & DeShon, R. P. (2020). Thinking longitudinal: A framework for scientific inferences with temporal data. In Y. Griep, S. D. Hansen, T. Vantilborgh & J. Hoffmans (Eds.), *Handbook of temporal dynamic organizational behavior* (pp. 404-425). Edward Elgar Publishing.

Dishop, C. R., Olenick, J. & DeShon, R. P. (2020). Principles for taking a dynamic perspective. In Y. Griep, S. D. Hansen, T. Vantilborgh & J. Hoffmans (Eds.), *Handbook of temporal dynamic organizational behavior* (pp. 26-43). Edward Elgar Publishing.

Donovan, J. J., & Radosevich, D. J. (1998). The moderating role of goal commitment on the goal difficulty–performance relationship: A meta-analytic review and critical reanalysis. *Journal of applied psychology, 83*(2), 308.

Donovan, J. J., & Williams, K. J. (2003). Missing the mark: Effects of time and causal attributions on goal revision in response to goal-performance discrepancies. *Journal of Applied Psychology, 88*(3), 379.

Dosi, G. (1988). Sources, procedures, and microeconomic effects of innovation. *Journal of economic literature*, 1120-1171.

Ehrhart, M. G. (2018). Helping in Organizations: A Review and Directions for Future Research. In P. M. Podsakoff, S. B. Mackenzie, and N. P. Podsakoff (Eds), *The Oxford Handbook of Organizational Citizenship Behavior* (pp. 475-506). Oxford: Oxford University Press.

Ehrhart, M. G., & Naumann, S. E. (2004). Organizational citizenship behavior in work groups: A group norms approach. *Journal of Applied Psychology*, *89*(6), 960.

Einstein, A. (1905). On the movement of small particles suspended in stationary liquids required by the molecularkinetic theory of heat. *Ann. d. Phys*, *17*(549-560), 1.

Fama, E. F. (1995). Random walks in stock market prices. *Financial Analysts Journal*, *51*(1), 75–80.

Falk, R., Falk, R., & Ayton, P. (2009). Subjective patterns of randomness and choice: Some consequences of collective responses. *Journal of Experimental Psychology: Human Perception and Performance*, *35*(1), 203.

Fisher, R. A. (1925). *Statistical Methods for Research Workers.* Edinburgh: Oliver & Boyd.

Freeman, J. (1980). The unit problem in organizational research. *Frontiers in organization and management,* 59-68.

Gabriel, A. S., Koopman, J., Rosen, C. C., & Johnson, R. E. (2018). Helping others or helping oneself? An episodic examination of the behavioral consequences of helping at work. *Personnel Psychology*, *71*(1), 85–107.

George, J. M., & Brief, A. P. (1992). Feeling good-doing good: A conceptual analysis of the mood at work-organizational spontaneity relationship. *Psychological Bulletin*, *112*(2), 310.

Gersick, C. J. (1991). Revolutionary change theories: A multilevel exploration of the punctuated equilibrium paradigm. *Academy of management review, 16*(1), 10-36.

Gilovich, T. (2008). *How we know what isn't so: The fallibility of human reason in everyday life*. Simon and Schuster.

Gilovich, T., Vallone, R., & Tversky, A. (1985). The hot hand in basketball: On the misperception of random sequences. *Cognitive psychology*, *17*(3), 295-314.

Glomb, T. M., Bhave, D. P., Miner, A. G., & Wall, M. (2011). Doing Good, Feeling Good: Examining the Role of Organizational Citizenship Behaviors in Changing Mood. *Personnel Psychology*, *64*(1), 191–223.

Gould, S. J. (2007). *The Richness of Life: The Essential Stephen Jay Gould*. WW Norton & Company.

Gnutzmann, H. (2008). Network formation under cumulative advantage: evidence from the Cambridge high-tech cluster. *Computational Economics, 32*(4), 407-413.

Graen, G., & Schiemann, W. (1978). Leader–member agreement: A vertical dyad linkage approach. *Journal of Applied psychology*, *63*(2), 206.

Granger, C. W. (1980). Long memory relationships and the aggregation of dynamic models. *Journal of econometrics*, *14*(2), 227-238.

Granger, C. W. (1981). Some properties of time series data and their use in econometric model specification. *Journal of econometrics*, *16*(1), 121-130.

Grant, A. M. (2008). Does intrinsic motivation fuel the prosocial fire? Motivational synergy in predicting persistence, performance, and productivity. *Journal of Applied Psychology*, *93*(1), 48.

Grant, A. M., & Mayer, D. M. (2009). Good soldiers and good actors: Prosocial and impression management motives as interactive predictors of affiliative citizenship behaviors. *Journal of Applied Psychology*, *94*(4), 900–912.

Grover, R. (2003, November). Paramount’s Cold Snap: The Heat Is On. *BusinessWeek*.

Hafenbrack, A. C., Cameron, L. D., Spreitzer, G. M., Zhang, C., Noval, L. J., & Shaffakat, S. (2019). Helping People by Being in the Present: Mindfulness Increases Prosocial Behavior. *Organizational Behavior and Human Decision Processes*, S0749597817308956.

Hofmann, D. A., Burke, M. J., & Zohar, D. (2017). 100 years of occupational safety research: From basic protections and work analysis to a multilevel view of workplace safety and risk. *Journal of applied psychology, 102*(3), 375.

Hofmann, D. A., Lei, Z., & Grant, A. M. (2009). Seeking help in the shadow of doubt: the sensemaking processes underlying how nurses decide whom to ask for advice. *Journal of Applied Psychology*, *94*(5), 1261.

Hom, P. W., Lee, T. W., Shaw, J. D., & Hausknecht, J. P. (2017). One hundred years of employee turnover theory and research. *Journal of Applied Psychology, 102*(3), 530.

Hong, L., & Page, S. E. (2008). Some microfoundations of collective wisdom. *Collective Wisdom*, 56-71.

Ilies, R., Scott, B. A., & Judge, T. A. (2006). The interactive effects of personal traits and experienced states on intraindividual patterns of citizenship behavior. *Academy of Management Journal*, *49*(3), 561–575.

Johnson, S. D. (2014). How do offenders choose where to offend? Perspectives from animal foraging. *Legal and Criminological Psychology*, *19*(2), 193–210.

Kahneman, D., & Tversky, A. (1973). On the psychology of prediction. *Psychological review*, *80*(4), 237.

Kenkre, V., Montroll, E., & Shlesinger, M. (1973). Generalized master equations for continuous-time random walks. *Journal of Statistical Physics*, *9*(1), 45–50.

Klein, K. J., Dansereau, F., & Hall, R. J. (1994). Levels issues in theory development, data collection, and analysis. *Academy of Management review, 19*(2), 195-229.

Klemperer, P. (1995). Competition when consumers have switching costs: An overview with applications to industrial organization, macroeconomics, and international trade. *The review of economic studies, 62*(4), 515-539.

Koopman, J., Lanaj, K., & Scott, B. A. (2016). Integrating the Bright and Dark Sides of OCB: A Daily Investigation of the Benefits and Costs of Helping Others. *Academy of Management Journal*, *59*(2), 414–435.

Kot, M., Medlock, J., Reluga, T., & Walton, D. B. (2004). Stochasticity, invasions, and branching random walks. *Theoretical Population Biology*, *66*(3), 175–184.

Kozlowski, S. W., & Ilgen, D. R. (2006). Enhancing the effectiveness of work groups and teams. *Psychological science in the public interest*, *7*(3), 77-124.

Kuljanin, G., Braun, M. T., & DeShon, R. P. (2011). A cautionary note on modeling growth trends in longitudinal data. *Psychological Methods*, *16*(3), 249–264.

Kristof-Brown, A. L., Li, C. S., & Schneider, B. (2018). Fitting In and Doing Good: A Review of Person-Environment Fit and Organizational Citizenship Behavior Research. In P. M. Podsakoff, S. B. Mackenzie, and N. P. Podsakoff (Eds), *The Oxford Handbook of Organizational Citizenship Behavior* (pp. 353-370). Oxford: Oxford University Press.

Kwiatkowski, D., Phillips, P. C., Schmidt, P., & Shin, Y. (1992). Testing the null hypothesis of stationarity against the alternative of a unit root. *Journal of Econometrics*, *54*(1-3), 159–178.

Lance Ferris, D., Fatimah, S., Yan, M., Liang, L. H., Lian, H., & Brown, D. J. (2019). Being sensitive to positives has its negatives: An approach/avoidance perspective on reactivity to ostracism. *Organizational Behavior and Human Decision Processes*, *152*, 138–149.

Leana, C. R., & van Buren, H. J. (1999). Organizational Social Capital and Employment Practices. *The Academy of Management Review*, *24*(3), 538. doi:[10.2307/259141](https://doi.org/10.2307/259141)

Lee, T. W., & Mitchell, T. R. (1994). An Alternative Approach: The Unfolding Model of Voluntary Employee Turnover. *The Academy of Management Review*, *19*(1), 51–89. doi:[10.2307/258835](https://doi.org/10.2307/258835)

Lennard, A. C., & Van Dyne, L. (2018). Helping That Hurts Intended Beneficiaries: A New Perspective on the Dark Side of Helping Organizational Citizenship Behaviors. In P. M. Podsakoff, S. B. Mackenzie, and N. P. Podsakoff (Eds), *The Oxford Handbook of Organizational Citizenship Behavior* (pp. 169-184). Oxford: Oxford University Press.

LePine, J. A., Erez, A., & Johnson, D. E. (2002). The nature and dimensionality of organizational citizenship behavior: a critical review and meta-analysis. *Journal of applied psychology, 87*(1), 52.

Levinthal, D. A. (1991). Random walks and organizational mortality. *Administrative Science Quarterly*, 397-420.

Lévy, P. (1940). Sur certains processus stochastiques homogènes. *Compositio mathematica*, *7*, 283-339.

Li, W., Frese, M., & Haidar, S. (2018). Distinguishing Proactivity From Citizenship Behavior: Similarities and Differences. In P. M. Podsakoff, S. B. Mackenzie, and N. P. Podsakoff (Eds), *The Oxford Handbook of Organizational Citizenship Behavior* (pp. 55-68). Oxford: Oxford University Press.

Li, N., Zhao, H. H., Walter, S. L., Zhang, X.-a., & Yu, J. (2015). Achieving more with less: Extra milers’ behavioral influences in teams. *Journal of Applied Psychology*, *100*(4), 1025–1039. doi:[http://dx.doi.org.proxy1.cl.msu.edu/10.1037/apl0000010](https://doi.org/http://dx.doi.org.proxy1.cl.msu.edu/10.1037/apl0000010)

Lieberman, M. B., & Montgomery, D. B. (1988). First‐mover advantages. *Strategic Management Journal, 9*(S1), 41-58.

López-Dominguez, M., Enache, M., Sallan, J. M., & Simo, P. (2013). Transformational leadership as an antecedent of change-oriented organizational citizenship behavior. *Journal of Business Research*, *66*(10), 2147–2152.

Lord, R. G., Day, D. V., Zaccaro, S. J., Avolio, B. J., & Eagly, A. H. (2017). Leadership in applied psychology: Three waves of theory and research. *Journal of Applied Psychology, 102*(3), 434.

MacKenzie, S. B., Podsakoff, P. M., & Fetter, R. (1991). Organizational citizenship behavior and objective productivity as determinants of managerial evaluations of salespersons’ performance. *Organizational Behavior and Human Decision Processes*, *50*(1), 123–150.

MacKenzie, S. B., Podsakoff, P. M., & Fetter, R. (1993). The impact of organizational citizenship behavior on evaluations of salesperson performance. *Journal of Marketing*, *57*(1), 70–80.

MacKenzie, S. B., Podsakoff, P. M., & Podsakoff, N. P. (2011). Challenge‐oriented organizational citizenship behaviors and organizational effectiveness: Do challenge‐oriented behaviors really have an impact on the organization's bottom line?. *Personnel Psychology, 64*(3), 559-592.

Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A temporally based framework and taxonomy of team processes. *Academy of management review, 26*(3), 356-376.

Maslin, J. (2006, October). His Heart Belongs to (Adorable) iPod. *New York Times*.

Mathieu, J. E., Hollenbeck, J. R., van Knippenberg, D., & Ilgen, D. R. (2017). A century of work teams in the Journal of Applied Psychology. *Journal of applied psychology, 102*(3), 452.

Mathieu, J. E., Tannenbaum, S. I., Donsbach, J. S., & Alliger, G. M. (2014). A review and integration of team composition models: Moving toward a dynamic and temporal framework. *Journal of Management, 40*(1), 130-160.

Matta, F. K., Sabey, T. B., Scott, B. A., Lin, S.-H. (., & Koopman, J. (2020). Not all fairness is created equal: A study of employee attributions of supervisor justice motives. *Journal of Applied Psychology*, *105*(3), 274–293. doi:[http://dx.doi.org.proxy2.cl.msu.edu/10.1037/apl0000440](https://doi.org/http://dx.doi.org.proxy2.cl.msu.edu/10.1037/apl0000440)

Meglino, B. M., & Korsgaard, A. (2004). Considering rational self-interest as a disposition: Organizational implications of other orientation. *Journal of Applied Psychology*, *89*(6), 946.

Meredith, W. (1993). Measurement invariance, factor analysis and factorial invariance. *Psychometrika*, *58*(4), 525-543.

Methot, J. R., Lepak, D., Shipp, A. J., & Boswell, W. R. (2017). Good Citizen Interrupted: Calibrating a Temporal Theory of Citizenship Behavior. *Academy of Management Review*, *42*(1), 10–31. doi:[10.5465/amr.2014.0415](https://doi.org/10.5465/amr.2014.0415)

Mitchell, M. (2009). *Complexity: A guided tour*. Oxford University Press.

Mitchell, M. S., Greenbaum, R. L., Vogel, R. M., Mawritz, M. B., & Keating, D. J. (2019). Can You Handle the Pressure? The Effect of Performance Pressure on Stress Appraisals, Self-regulation, and Behavior. *Academy of Management Journal*, *62*(2), 531–552. doi:[10.5465/amj.2016.0646](https://doi.org/10.5465/amj.2016.0646)

Mlodinow, L. (2009). *The drunkard's walk: How randomness rules our lives*. Vintage.

Moorman, R., Brower, Hl., & Grover, S. (2018). Organizational Citizenship Behavior and Trust: The Double Reinforcing Spiral. In P. M. Podsakoff, S. B. Mackenzie, and N. P. Podsakoff (Eds), *The Oxford Handbook of Organizational Citizenship Behavior* (pp. 285-296). Oxford: Oxford University Press.

Motowidlo, S. J., & Van Scotter, J. R. (1994). Evidence that task performance should be distinguished from contextual performance. *Journal of Applied Psychology*, *79*(4), 475.

Muthén, B. (1985). A method for studying the homogeneity of test items with respect to other relevant variables. *Journal of educational statistics*, *10*(2), 121-132.

Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, *23*(2), 242–266.

Nelson, R. R., & Winter, S. G. (1982). The Schumpeterian tradeoff revisited. *The American Economic Review, 72*(1), 114-132.

Newman, M. E. (2005). A measure of betweenness centrality based on random walks. *Social Networks*, *27*(1), 39–54.

Newton, D. W., & LePine, J. A. (2018). Organizational Citizenship Behavior and Job Engagement: "You Gotta Keep 'em Separated!" In P. M. Podsakoff, S. B. Mackenzie, and N. P. Podsakoff (Eds), *The Oxford Handbook of Organizational Citizenship Behavior* (pp. 43-54). Oxford: Oxford University Press.

Neyman, J., & Pearson, E. S. (1928). On the Use and Interpretation of Certain Test Criteria for Purposes of Statistical Inference. *Biometrika, 20A*, 175-240: 263-294.

O’Boyle Jr, E., & Aguinis, H. (2012). The best and the rest: Revisiting the norm of normality of individual performance. *Personnel Psychology, 65*(1), 79-119.

Organ, D. W. (1988). *Organizational citizenship behavior: The good soldier syndrome.* Lexington MA: Lexington Books.

Organ, D. W., Podsakoff, P. M., & Podsakoff, N. P. (2011). Expanding the criterion domain to include organizational citizenship behavior: Implications for employee selection. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology* (Vol. 2, pp. 281-323). Washington, DC: American Psychological Association.

Organ, D. W., Podsakoff, P. M., & MacKenzie, S. B. (2005). *Organizational citizenship behavior: Its nature, antecedents, and consequences*. Sage Publications.

Organ, D. W., & Ryan, K. (1995). A meta-analytic review of attitudinal and dispositional predictors of organizational citizenship behavior. *Personnel Psychology*, *48*(4), 775–802.

Parker, M. (2019). *Humble Pi: A Comedy of Maths Errors*. Penguin Book House: UK.

Parker, S. K., Morgeson, F. P., & Johns, G. (2017). One hundred years of work design research: Looking back and looking forward. *Journal of applied psychology, 102*(3), 403.

Pearson, K. (1905). The problem of the random walk. *Nature*, *72*(1867), 342-342.

Penner, L. A., Midili, A. R., & Kegelmeyer, J. (1997). Beyond Job Attitudes: A Personality and Social Psychology Perspective on the Causes of Organizational Citizenship Behavior. *Human Performance*, *10*(2), 111–131. doi:[10.1207/s15327043hup1002\_4](https://doi.org/10.1207/s15327043hup1002_4)

Peters, O. (2019). The ergodicity problem in economics. *Nature Physics*, *15*(12), 1216-1221.

Piccolo, R. F., Buengeler, C., & Judge, T. A. (2018). Leadership [Is] Organizational Citizenship Behavior: Review of a Self-Evident Link. In P. M. Podsakoff, S. B. Mackenzie, and N. P. Podsakoff (Eds), *The Oxford Handbook of Organizational Citizenship Behavior* (pp. 297-316). Oxford: Oxford University Press.

Podsakoff, N. P., Whiting, S. W., Podsakoff, P. M., & Blume, B. D. (2009). Individual-and organizational-level consequences of organizational citizenship behaviors: A meta-analysis. *Journal of Applied Psychology*, *94*(1), 122.

Podsakoff, P. M., & MacKenzie, S. B. (1997). Impact of organizational citizenship behavior on organizational performance: A review and suggestion for future research. *Human Performance*, *10*(2), 133–151.

Podsakoff, P. M., MacKenzie, S. B., Paine, J. B., & Bachrach, D. G. (2000). Organizational citizenship behaviors: A critical review of the theoretical and empirical literature and suggestions for future research. *Journal of Management*, *26*(3), 513–563.

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2018). *The Oxford handbook of organizational citizenship behavior*. Oxford University Press.

Polson, N. G., & Scott, J. G. (2012). Good, great, or lucky? Screening for firms with sustained superior performance using heavy-tailed priors. *The Annals of Applied Statistics*, *6*(1), 161–185.

Randić, M. (1980). Random walks and their diagnostic value for characterization of atomic environment. *Journal of Computational Chemistry*, *1*(4), 386–399.

Saloner, G., Shepard, A., & Podolny, J. (2001). *Strategic Management*. New York: John Willey & Sons.

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.

Schmidt, A. M., & Dolis, C. M. (2009). Something’s got to give: The effects of dual-goal difficulty, goal progress, and expectancies on resource allocation. *Journal of Applied Psychology, 94*(3), 678.

Schmidt, A. M., Dolis, C. M., & Tolli, A. P. (2009). A matter of time: individual differences, contextual dynamics, and goal progress effects on multiple-goal self-regulation. *Journal of Applied Psychology, 94*(3), 692.

Schneider, B., González-Romá, V., Ostroff, C., & West, M. A. (2017). Organizational climate and culture: Reflections on the history of the constructs in the Journal of Applied Psychology. *Journal of Applied Psychology, 102*(3), 468.

Schreurs, B. H., Hetty van Emmerik, I., Günter, H., & Germeys, F. (2012). A weekly diary study on the buffering role of social support in the relationship between job insecurity and employee performance. *Human Resource Management*, *51*(2), 259–279.

Shang, Y. (2018). A note on the h index in random networks. *The Journal of Mathematical Sociology*, *42*(2), 77–82.

Simon, H. A. (1956). Rational choice and the structure of the environment. *Psychological Review*, *63*(2), 129.

Simon, H. A. (1992). What is an “explanation” of behavior? *Psychological Science*, *3*(3), 150–161.

Sims, D. W., Reynolds, A. M., Humphries, N. E., Southall, E. J., Wearmouth, V. J., Metcalfe, B., & Twitchett, R. J. (2014). Hierarchical random walks in trace fossils and the origin of optimal search behavior. *Proceedings of the National Academy of Sciences*, *111*(30), 11073–11078.

Slade, G. (1996). Random walks. *American Scientist*, *84*(2), 146-153.

Smith, C., Organ, D. W., & Near, J. P. (1983). Organizational citizenship behavior: Its nature and antecedents. *Journal of Applied Psychology*, *68*(4), 653.

Spence, J. R., Ferris, D. L., Brown, D. J., & Heller, D. (2011). Understanding daily citizenship behaviors: A social comparison perspective. *Journal of Organizational Behavior*, *32*(4), 547–571. doi:[10.1002/job.738](https://doi.org/10.1002/job.738)

Spencer-Brown, G. (1957). *Probability and Scientific Inference*. Longmans Green, London and New York.

Stamovlasis, D., & Tsaparlis, G. (2003). A complexity theory model in science education problem solving: Random walks for working memory and mental capacity. *Nonlinear Dynamics, Psychology, and Life Sciences*, *7*(3), 221–244.

Stewart, I. (1999). *Life's other secret: The new mathematics of the living world*. Penguin Book House: New York.

Stewart, G. L., & Nandkeolyar, A. K. (2007). Exploring how constraints created by other people influence intraindividual variation in objective performance measures. *Journal of Applied Psychology*, *92*(4), 1149.

Thiel, C. E., Hardy III, J. H., Peterson, D. R., Welsh, D. T., & Bonner, J. M. (2018). Too many sheep in the flock? Span of control attenuates the influence of ethical leadership. *Journal of Applied Psychology, 103*(12), 1324.

Thurstone, L. L. (1931). Multiple factor analysis. *Psychological review*, *38*(5), 406.

Vancouver, J. B., Li, X., Weinhardt, J. M., Steel, P., & Purl, J. D. (2016). Using a computational model to understand possible sources of skews in distributions of job performance. *Personnel Psychology, 69*(4), 931-974.

Van Dyne, L., Cummings, L. L., & McLean Parks, J. (1995), Extra-role behaviors: In pursuit of construct and definitional clarity (a bridge over muddied waters). In L. L. Cummings & B. M. Staw (Eds.), *Research in organizational behavior* (Vol. 17, pp. 215-330). Greenwich, CT: JAI Press.

Van Dyne, L., & LePine, J. A. (1998). Helping and voice extra-role behaviors: Evidence of construct and predictive validity. *Academy of Management Journal*, *41*(1), 108–119.

Van Scotter, J., Motowidlo, S. J., & Cross, T. C. (2000). Effects of task performance and contextual performance on systemic rewards. *Journal of Applied Psychology*, *85*(4), 526.

Wang, L., Law, K. S., Zhang, M. J., Li, Y. N., & Liang, Y. (2019). It’s mine! Psychological ownership of one’s job explains positive and negative workplace outcomes of job engagement. *Journal of Applied Psychology*, *104*(2), 229.

Wee, E. X., Liao, H., Liu, D., & Liu, J. (2017). Moving from abuse to reconciliation: A power-dependence perspective on when and how a follower can break the spiral of abuse. *Academy of Management Journal*, *60*(6), 2352-2380.

Wiener, N. (1930). Generalized harmonic analysis. *Acta mathematica*, *55*, 117-258.

Wu, C. & Parker, S. K. (2012). The role of attachment styles in shaping proactive behaviour: An intra-individual analysis. *Journal of Occupational and Organizational Psychology*, *85*(3), 523–530.