

Six Degrees of Separation: An Application to I-O Psychology

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Author's Note: This is a humor piece, intertwined with research, and is written in APA journal form to better convey this. The author has no formal affiliation with Dr. Highhouse or Bowling Green State University. All arguments are based on the opinions of the author and should have no consequence towards the credibility of APA, APS, or SIOP. Comments and criticisms should be e-mailed to the author (Jesse S. Michel) at michelj@msu.edu.

Abstract

The current work applies Stanley Milgram's small world phenomenon (i.e., "small world problem") to the field of I-O psychology through co-author publication linkages. Following 6 criteria, **Scott Highhouse** was chosen as the target. Co-author publication linkages were determined for (a) top authors within the I-O community, (b) quasi-random faculty members of highly productive I-O programs in North America, and (c) publication trends of the target. Results suggest that the small world phenomenon is alive and well with mean linkages of 3.00 to top authors, mean linkages of 2.50 to quasi-random faculty members, and a relatively broad and nonrepetitive set of co-author linkages for the target. Implications are discussed and suggestions for future research are set forth.

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Mirroring a short story titled *Láncszemek (Links)* by Hungarian author Frigyes Karinthy, Stanley Milgram's small world experiments (e.g., Milgram, 1967; Travers & Milgram, 1969) examined the interconnectedness, or social capital, of individual networks. As one of the most eminent psychologists of the 20th century (Haggblom, Warnick, Warnick, Jones, Yarbrough, Russell, et al., 2002), Milgram's work on the U.S. population displayed how society was connected by approximately six degrees of separation. Though this term was never used by Milgram, this notion of six degrees of separation has gained iconic status in today's popular culture. Most notable of these are the "six degrees of Kevin Bacon," an application to the Hollywood or film population where actors are connected through film appearances.

The purpose of the current work is to apply the six degrees of separation concept to the field of I-O psychology through publication linkages. Accordingly, after a target is identified, the following research questions will be answered.

RQ1: To what degree of separation are the top authors within the I-O community?

RQ2: To what degree of separation are faculty within top I-O programs?

RQ3: What are the publication trends, in regards to separation, of the target?

As such, this work should be viewed as an initial feasibility study of the small world phenomenon within the field of I-O psychology.

Method

Inclusion Criteria and Selection of Target

There were four primary criteria for target selection: (a) Fellow of SIOP, (b) highly published in I-O relevant journals, (c) current faculty member in an I-O program, and (d) obtained a PhD from an I-O program. To narrow the target pool, two subjective criteria were chosen: (e) someone mid-career, and (f) someone known within the I-O community as having a sense of humor, to ensure my career would continue past the publication of this piece. Of the 263 candidates who met the first criterion, **Scott Highhouse** also met the additional criteria.

Rules of Separation

Three publication forms were chosen for inclusion: (a) co-authored peer reviewed journal articles, (b) co-authored book chapters, and (c) co-authored books. All other works were excluded in the current work.

Degrees of Separation

Degrees of separation were determined via manual PsychINFO author searches. In this application, a linkage or degree of separation refers to co-authorship. For example, if **Kurt Kraiger** were to be linked to Scott Highhouse, a linkage would be developed via Kraiger and Ford (1985)→Zalesny and Ford (1990)→Zalesny and Highhouse (1992). This linkage would result in a “Highhouse Number” of 3. Accordingly, Highhouse Numbers represent the linkages between authors and were used to answer Research Questions 1 and 2 (see Tables 1 and 2). To answer Research Question 3, a “Highhouse Factor” was used. The Highhouse Factor represents the extent to which an author has co-authored with Highhouse (i.e., those who have a Highhouse Number of 1). For example, if someone with a Highhouse Number of 1 co-authored three works that meet the criteria herein, they would have a Highhouse Factor of 3.

Results

Research Question 1

To answer Research Question 1, Highhouse Numbers were determined for the top 10 authors in the *Journal of Applied Psychology* and *Personnel Psychology* during the 1990s (see Ones & Viswesvaran, 2000). The mean Highhouse Number for these 10 authors was 3.00. These results indicate that the I-O community is very small in regards to publication linkages.

Table 1

Highhouse Numbers for the Most Published Authors in *Journal of Applied Psychology* and *Personnel Psychology* During the 1990s

Absolute rank (Category)	Author	Current affiliation	Total # of <i>JAP</i> and <i>PP</i> publications in the 1990s	Highhouse number
1 (1)	Timothy Judge	University of Florida	20	4
2 (2)	Paul Sackett	University of Minnesota	19	2
3 (3)	Neal Schmitt	Michigan State University	18	3
4.5 (4)	Ann Marie Ryan	Michigan State University	16	2
4.5 (4)	Frank Schmidt	University of Iowa	16	2
7 (5)	Murray Barrick	Texas A&M University	13	4
7 (5)	Michael Campion	Purdue University	13	2
7 (5)	Michael Mount	University of Iowa	13	3
9 (6)	Eduardo Salas	University of Central Florida	12	4
10 (7)	Robert Bretz, Jr.	University of Notre Dame	11	4

Note: Productivity rankings are from Ones and Viswesvaran (2000).

Table 2

Highhouse Numbers for Faculty Members From the Top 10 I-O Doctoral Programs in North America

Program rank	Overall productivity index	Program	Quasi-random faculty member	Highhouse number
1	87.02	Michigan State University	Richard DeShon	3
2	79.13	University of South Florida	Paul Spector	3
3	73.41	Pennsylvania State University	Kevin Murphy	2
4	73.15	University of Illinois	Fritz Drasgow	2
5	68.50	University of Minnesota	Deniz Ones	3
6	62.06	Bowling Green State University	Milton Hakel	2
7	59.90	George Mason University	Jose Cortina	3
8	59.67	University of Maryland	Paul Hanges	4
9	57.56	University of Akron	Dennis Doverspike	1
10	56.93	University of Georgia	Charles Lance	2

Note: Productivity rankings are from Oliver, Blair, Gorman, & Woehr (2005).

Research Question 2

To answer Research Question 2, Highhouse Numbers were determined for quasi-randomly selected faculty from the top 10 most productive I-O departments in North America (see Oliver, Blair, Gorman, & Woehr, 2005). The mean Highhouse Number for these 10 authors was 2.50. These results also indicate that the I-O community is very small in regards to publication linkages.

Research Question 3

To answer Research Question 3, Highhouse Factors were determined for the top 15 co-authors of Scott Highhouse. The mean Highhouse Factor for these 15 authors was 2.53. Though not displayed in Table 3, the mean Highhouse Factor for all coauthors was 1.51. These results indicate that coauthor publication trends within the I-O community can be relatively broad and nonrepetitive, with 45 co-authors across 54 publications that met the inclusion criteria.

Table 3

Top 15 Authors in Regards to the Highhouse Factor

Absolute rank	Author	Current affiliation	Highhouse number	Highhouse factor
1 (1)	Margaret Brooks	Bowling Green State University	1	5
2 (2)	Jerel Slaughter	University of Arizona	1	4
4 (3)	Jody Hoffman	University of Michigan	1	3
4 (3)	Filip Lievens	Ghent University	1	3
4 (3)	Michael Zickar	Bowling Green State University	1	3
10.5 (4)	Peter Bachiochi	Eastern Connecticut State University	1	2
10.5 (4)	Allison Collins	Boston University	1	2
10.5 (4)	Andrew Gallo	Unknown	1	2
10.5 (4)	John Hazer	Indiana University-Purdue University Indianapolis	1	2
10.5 (4)	David Mohr	University of California	1	2
10.5 (4)	Paul Paese	University of Missouri	1	2
10.5 (4)	Charlie Reeve	University of North Carolina	1	2
10.5 (4)	Evan Sinar	Development Dimensions International	1	2
10.5 (4)	Todd Thorsteinson	University of Idaho	1	2
10.5 (4)	Payam Yüce İpýk	Sabancı Holding	1	2

Note: Categorical rankings could be further distinguished by Highhouse Numbers of these author’s co-authors. For example, if **Michael Zickar** has five co-authors who have published with Scott Highhouse (excluding publications used for the Highhouse Factor), and **Jody Hoffman** and **Filip Lievens** have three co-authors who have published with Scott Highhouse (excluding publications used for the Highhouse Factor), Michael Zickar would move to the absolute rank of 3. Rankings for Jody Hoffman and Filip Lievens could then move to co-authors once removed (i.e., co-authors of their co-authors) and calculate Highhouse Numbers to determine absolute ranks for 4 and 5. In essence, rankings beyond the Highhouse Factor could be determined through a Highhouse nomological network.

Discussion

The general findings of the current work are that publication linkages within the I-O community mimic the original conception of the small world phenomenon. That is, all of the linkages presented in Tables 1 and 2 were accomplished within four linkages, with a mean linkage of 3.00 with top authors in *Journal of Applied Psychology* and *Personnel Psychology*, and a mean linkage of 2.50 with quasi-random faculty in the most productive I-O programs in North America. Indeed, it seems the I-O community is a small world.

Contributions and Implications

The findings herein could be incorporated to one's general teaching and research philosophies. For students, you could incorporate Highhouse Numbers into your dissertation proposal. As an "ice breaker," point out your committee's Highhouse Numbers, and proceed to point-out Highhouse Numbers of cited authors (e.g., **Fred Fiedler**–Highhouse Number of 3; Larry Williams–Highhouse Number of 2). For faculty, this conception of the I-O community could be used to quiz graduate students. "What are the Highhouse Numbers for **Michael Burke, Russell Cropanzano, and Leslie Hammer**?" If the graduate student is unable to recite 2, 2, and 3, with the appropriate linkages, they suffer an appropriate form of punishment (e.g., expulsion from your laboratory). Additionally, this could be a supplement for traditional oral qualification exams. What better way to quiz I-O knowledge than coauthor linkages of the material? "New this year is the Highhouse Enriched Oral Qualification Exam. Good luck!"

Recommendations for Research

There are at least three avenues for future research. First, variation of the coauthor linkages could be implemented. For example, one could have forward linkages based on publication dates (Highhouse→Lievens, 2005; Lievens→Sackett, 2007), backward linkages based on publication dates (Highhouse→Lievens, 2005; Lievens→Ryan, 2004), in addition to the bi-directional linkages employed in the current study (Highhouse→Lievens, 2005; Lievens→Sanchez, 2004; Sanchez→Spector, 2006). This would be particularly helpful in the Highhouse Enriched Oral Qualification Exam if a "pass with distinction" versus mere "pass" were used.

Second, a database mapping the linkages between I-O authors could be developed. A similar project has been developed for the mathematician Paul Erdős (for a review of Paul Erdős' life and work see Hoffman, 1998). With an estimated 1,525 publications, which continue years after his death (cf., unreleased Beatles albums), Paul Erdős was an extremely prolific author. This database (see <http://www.oakland.edu/enp>) estimates that 511 authors have a Erdős Number of 1, and another 8,163 authors have a Erdős Number of 2 (e.g., Albert Einstein, Sheldon Lee Glashow, Harry M. Markowitz—all Nobel Prize winners). This methodology could be applied to I-O authors and supplement traditional publication records. "Denied tenure! But have you seen my linkages?"

A third area of research could investigate how good of a “center” Scott Highhouse is. That is, to what extent is Scott Highhouse the center of the I-O universe? This is not a novel concept and has been applied to the actor Kevin Bacon by the Department of Computer Science at the University of Virginia (The Oracle of Bacon at Virginia; see <http://oracleofbacon.org>). Their database shows that Kevin Bacon has an average Bacon Number of 2.96 (total number of linkable actors is 875,711). Interestingly, Kevin Bacon is not the center of the Hollywood universe (currently ranking 1,049th). This honor goes to Rod Steiger—General Decker from Mars Attacks! (average Steiger Number of 2.741). Surprisingly, even with the dark forces of Count Dooku and Saruman, Christopher Lee was unable to overcome the General (average Lee Number of 2.745). Nonetheless, future research could determine who is the center of the I-O universe. Such findings could be used to implement a monarchical form of SIOP regime. All hail Sovereign **Frank Schmidt** and the Ones, Viswesvaran, and Pearlman Aristocracy!

References

*Due to space requirements, references pertaining to Highhouse linkages are not included. A complete list of references can be obtained from the author.

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Appendix

List of Author Linkages for Highhouse Numbers >1 Reported in the Current Work

Author	Highhouse linkage
Murray Barrick	Dunn, Mount, Barrick, & Ones (1995)→Viswesvaran, Schmidt, & Ones (2005)→Campion, Outtz, Zedeck, Schmidt, Kehoe, Murphy, & Guion (2001)→Guion & Highhouse (2006)
Robert Bretz, Jr.	Trank, Rynes, & Bretz (2002)→Orlitzky, Schmidt, & Rynes (2003)→Campion et al. (2001)→Guion & Highhouse (2006)

Appendix Cont'd.

Author	Highhouse linkage
Michael Burke	Burke, Hoffman, Hazer, & Hall (1982)→Beckner, Highhouse, & Hazer (1998)
Michael Champion	Champion et al. (2001)→Guion & Highhouse (2006)
Jose Cortina	Laczo, Sackett, Bobko, & Cortina (2005)→Sackett, Lievens, Berry, & Landers (2007)→Lievens, Highhouse, & De Corte (2005)
Russell Cropanzano	Cropanzano, Slaughter, & Bachiochi (2005)→Slaughter, Zickar, Highhouse, & Mohr (2004)
Richard DeShon	Murphy & DeShon (2000)→Champion et al. (2001)→Guion & Highhouse (2006)
Fritz Drasgow	Drasgow, Levine, & Zickar (1996)→Slaughter et al. (2004)
Fred Fiedler	Ayman, Chemers, Fiedler, Romano, Vecchio, & Zaccaro (1998)→Zalesny & Vecchio (1997)→Zalesny & Highhouse (1992)
Milton Hakel	Reeve & Hakel (2002)→Reeve, Highhouse, & Brooks (2006)
Leslie Hammer	Balzer, Hammer, Sumner, Birchenough, Martens, & Raymark (1994)→Stanton, Balzer, Smith, Parra, & Ironson (2001)→Highhouse, Stanton, & Reeve (2004)
Paul Hanges	Alexander, Herbert, DeShon, & Hanges (1992)→Murphy & DeShon (2000)→Champion et al. (2001)→Guion & Highhouse (2006)
Timothy Judge	Judge, Martocchio, & Thoresen (1997)→Robert, Probst, Martocchio, Drasgow, & Lawler (2000)→Drasgow, Levine, & Zickar (1996)→Slaughter et al. (2004)
Charles Lance	Conway, Lievens, Scullen, & Lance (2004)→Lievens et al. (2005)
Michael Mount	Judiesch, Schmidt, & Mount (1992)→Champion et al. (2001)→Guion→Highhouse (2006)
Kevin Murphy	Champion et al. (2001)→Guion & Highhouse (2006)
Deniz Ones	Viswesvaran, Schmidt, & Ones (2005)→Champion et al. (2001)→Guion & Highhouse (2006)
Ann Marie Ryan	Anderson, Lievens, van Dam, & Ryan (2004)→Lievens et al. (2005)
Paul Sackett	Sackett et al. (2007)→Lievens et al. (2005)
Eduardo Salas	Kozlowski, Brown, Weissbein, Cannon-Bowers, & Salas (2000)→Kozlowski & Kirsch (1987)→Zalesny & Kirsch (1989)→Zalesny & Highhouse (1992)
Frank Schmidt	Champion et al. (2001)→Guion & Highhouse (2006)
Neal Schmitt	Schmitt, Sackett, & Ellingson (2002)→Sackett et al. (2007)→Lievens et al. (2005)
Paul Spector	Sanchez, Spector, & Cooper (2006)→Lievens, Sanchez, & De Corte (2004)→Lievens et al. (2005)
Larry Williams	Williams & Hazer (1986)→Hazer & Highhouse (1997)

Note: These are example linkages. Alternative linkages may exist and lower Highhouse Numbers may be possible by the time you read this. It is urged that readers update possible linkages for the Highhouse Enriched Oral Qualification Exam.