A Review of the Simulation Research in the Academy of Management Journal: Suggestions for Strengthening the Research Conducted by ABSEL Members

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ABSTRACT

Business simulations are viewed as a tool that can model relationships in the business environment. This paper provides a review of the simulation research published in the Academy of Management Journal from 1964 through 2010. Detailed information ranging from sample size and composition to variables studied and results is provided for twenty articles. The author also summarizes several dimensions of the ABSEL research and suggests some 'next steps' for researchers using computer simulations in both basic and applied studies.

INTRODUCTION

The Association for Business Simulation and Experiential Learning (ABSEL) is a professional not-for-profit organization whose mission is "to advance learning by encouraging the use, development, research, and assessment of simulations and experiential methods as applicable to the business environment" (www.absel.org). ABSEL's membership consists of business professors, consultants, gaming professionals, and researchers interested in promoting experiential learning and simulations in the understanding and teaching of business concepts. Seventy-five to one hundred professionals attend ABSEL's annual meeting which traditionally offered four tracks for papers and presentations – Simulations, Experiential and Innovative Methods, Online Education, and Games Ready to Play (Halpin & Viscusi, 2011). Effective in 2013 papers and presentations will be accepted for the following tracks: Simulations, Experiential, Innovations and Future Directions in Education, Games Ready to Play, Assessment of Learning, and Issues Relevant to ABSEL Scholarship (www.absel.org).

Simulation research presented at ABSEL's annual meeting has as one of its goals to improve our understanding of simulation development and use in the teaching of business concepts. A review of the literature on experiential learning as well as a suggested causal model that includes student and educator attributes, experiential characteristics, attitudes, and learning are offered by Burns, Gentry, and Wolfe (1990). What is less often pursued by ABSEL members is the use of simulations in studying basic research questions. Dickson, Gentry, and Burns (2004) summarize over twenty-five studies and fifteen simulations focused on basic research in organizational behavior, management, decision-making, forecasting, and marketing. The current study builds on the inventory provided by Dickson, et al. (2004) by reviewing simulation research in one source, the Academy of Management Journal (AMJ). In addition, the author summarizes several aspects of the ABSEL research and suggests a few 'next steps' for research using computer simulations.

THE ACADEMY OF MANAGEMENT JOURNAL

The Academy of Management (AOM) is a professional association of scholars whose focus is to research topics in management and organizations. It is the oldest and largest management association with 18,000 members from 107 nations (www.aomonline.org). The AOM publishes five scholarly journals, including the Academy of Management Journal (AMJ) which is published six times per year. The mission of the Academy of Management Journal is, "to publish empirical research that tests, extends, or builds management theory and contributes to management practice" (Rynes, Hillman, Ireland, Kirkman, Law, Miler, Rajagopalan, & Shapiro, 2005). As a premier journal in the field of management theory, an author who has his/her work published in AMJ benefits from greater recognition by peers, increased visibility in the profession, and more citations in works published by others (Caligiuri, 1999). There is also evidence that promotions and compensation are linked to publishing in prestigious journals (Gomez-Mejia & Balkin, 1992). Recognizing the importance of AMJ in the field of management research, a review of its studies using simulations will show how simulations are used in basic research and how ABSEL researchers should acknowledge and build on these findings in their future work.

SIMULATION ARTICLES IN THE ACADEMY OF MANAGEMENT JOURNAL

The process of identifying research linked to simulations in AMJ required some criteria for selection. With a focus on the term 'simulation', a search of the AMJ database through mid-2012 identified twenty articles which had the word 'simulation' in the title and/or abstract. The use of this method imposed a minimum standard – that the

Table 1
Simulation Studies in the Academy of Management Journal- 1963 through July 2012

Year	Title	Author(s)	Type of Study	Use of Word 'Simulation' in Title and/or Abstract	Use of Word 'Simulation' (or Variation) in Body of Paper(Frequency)	Computer Simulation/ Exercise	Discipline
1966	Artificial Intelligence , Computer Simulation of Human Cognitive and Social Processes, and Management Thought	Meinhart, W. A.	Theoretical	Title	29	NA	NA
1975	Experienced Managers' Performance in Experimental Man-Machine Decision System Simulation	Wynne, B.E. & Dickson, G.W.	Empirical	Title and Abstract	20	Simulation – Commodity Management Simulator	Management
1975	A Simulation Analysis of a Multiproduct Multiechelon Inventory-Distribution System	Aggarwal, S.C. & Dhavale, D.G.	Empirical	Title and Abstract	8	Simulation - The Distribution System Simulation (Connors, et.al., 1972)	Operations Management
1984	Modeling Strategic Acquisition Policies: A Simulation of Executives' Acquisition Decisions	Stahl, M. J. & Zimmerer, T.W.	Empirical	Title	0	Exercise – Acquisition Decision	Strategy
1985	Reactions to Feedback: The Role of Attributions	Liden, R.C. & Mitchell, T.R.	Empirical	Abstract	0	Exercise – Performance Feedback	Organizational Behavior
1985	Group Decision Making Under Threat: The Tycoon Game	Gladstein, D.L. & Reilly, N.P.	Empirical	Abstract	14	Simulation – Tycoon (Amos Tuck School of Business, 1973)	Strategy
1985	Top Level Management Priorities in Different Stages of the Organizational Life Cycle	Smith, K.G., Mitchell, T.R. & Summer, C.E.	Empirical	Abstract	37	Exercise – New Product Development Decision; Simulation – The Organizational Game (Miles, R.H., & W.A. Randolph, 1979)	Management
1989	Ability and Effort Attributions: Do They Affect How Managers Communicate Performance Feedback Information	Dugan, K.W.	Empirical	Abstract	0	Exercise – Performance Feedback	Management
1989	Marking Time: Predictable Transitions in Task Groups	Gersick, C.J.	Empirical	Abstract	8	Exercise – Developing Promotional Material	Organizational Behavior
1989	Managers Handling Disputes: Third-Party Roles and Perceptions of Fairness	Karambayya, R. & Brett, J.M.	Empirical	Abstract	42	Exercise – Dispute Resolution	Management
1990	Impact of Process and Outcome Feedback on the Relation of Goal Setting to Task Performance	Earley, P.C., Northcraft, G.B., Lee, C. & Lituchy, T.R.	Empirical	Abstract	18	Simulation (Northcraft & Earley, 1989)	Management

1991	Relationships Among Goal Difficulty, Business Strategies, and Performance on a Complex Management Simulation Task	Chesney, A.A. & Locke, E.A.	Empirical	Title and Abstract	57	Simulation – Tempomatic IV (Scott & Strickland, 1980)	Strategy
1999	The Timing of Adaptive Group Responses to Non-Routine Events	Waller, M.J.	Empirical	Abstract	27	Simulation – Flight Simulator	Organizational Behavior
2001	The Relationship of Team Goals, Incentives, and Efficacy to Strategic Risk, Tactical Implementation, and Performance	Knight, D., Durham, C.C. & Locke, E.A.	Empirical	Abstract	5	Simulation – BOLO:The Multi-Player Battle Game (Cheshire, S. 1993)	Strategy
2004	Goal Setting and Goal Orientation: An Integration of Two Different Yet Related Literatures	Seijts, G.H., Latham, G.P., Tasa, K., & Latham, B.W.	Empirical	Abstract	27	Simulation – Cellular Industry Business Game (Audia, et. al., 2000)	Management
2005	Team Locus-of-Control Composition, Leadership Structure, Information Acquisition, and Financial Performance: A Business Simulation Study	Boone, C., Van Olffen, W., & Van Witteloostuijn, A.	Empirical	Title and Abstract	12	Simulation – International Management Competition (Dutch multi-period management simulation; company training device)	Organizational Behavior
2006	System Breakdown: The Role of Mental Models and Transactive Memory in the Relationship Between Acute Stress and Team Performance	Ellis, A.P.J.	Empirical	Abstract	4	Simulation – Distributed Dynamic Decision-Making Simulation Phase I (Miller, Young, Kleinman, & Serfty, 1998)	Organizational Behavior
2006	The influence of team knowledge and formal plans on episodic team process-performance relationships	Mathieu, J.E. & Schulze, W.	Empirical	Abstract	15	Simulation – Capsim (www.capsim.com)	Strategy
2007	Being emotional during decision-making – good or bad? An empirical investigation	Seo, M. & Barrett, L.F.	Empirical	Abstract	30	Simulation – Author-Developed Internet-Based Investment Simulation	Finance
2010	Affect and the framing effect within individuals over time: Risk taking in a dynamic investment simulation	Seo, M., Goldfarb, B., & Barrett, L.F.	Empirical	Title and Abstract	31	Simulation – Author-Developed Internet-Based Investment Simulation	Finance

term 'simulation' be used and that it be found in a prominent position in the publication.

Nineteen of these works were empirical. In some cases the term 'simulation' refers to a computer-based tool while in others it is an 'exercise'. The earliest article on simulations was a theoretical piece addressing the potential for using computers to model human thinking (Meinhart, 1966). This author suggests that computer-aided programs may be a valuable tool in understanding the process of learning and decision making and concludes that computer models will benefit management scholars and behavioral scientists in the future. Following this publication, all works published in AMJ were empirical and involved either a computer simulation or exercise. Table 1 presents the year, article name, authors, and other characteristics of these twenty studies.

The two most productive decades for research on simulations in AMJ, based on number of publications, were the 1980s (7) and post-2000 (7). After the Meinhart article (1966) nine years passed before the next articles using simulations appeared (Aggarwal & Dhavale, 1975; Wynne & Dickson, 1975). Another nine years passed before the fourth article appeared in 1984 (Stahl & Zimmerer, 1984). Columns five and six of Table 1 show the number of instances when the word 'simulation' or a variation of the word (simulate, simulated, etc.) appear in the AMJ work. In three of the works prior to 1990 the word 'simulation' (or a variation) appeared in the title or abstract but was not mentioned in the body of the paper (Dugan, 1989; Liden & Mitchell, 1985; Stahl & Zimmerer, 1984). In these articles none of the authors describe or discuss simulations in their methodology, draw conclusions about their use, or suggest how future management research might incorporate this tool.

Prior to 1990, exercises are more frequently used than computer simulations in the research. In five of the nine earliest works exercises alone are used (Dugan, 1989; Gersick, 1989; Karambayya, 1989; Liden & Mitchell, 1985; Stahl & Zimmerer, 1984), one study uses both an exercise and a simulation (Smith, Mitchell, & Summer, 1985), and the remaining three involve only simulations (Aggarwal & Dhavale, 1975; Gladstein & Reilly, 1985; Wynne & Dickson, 1975). Beginning in 1990, all ten studies use computer simulations in their methodology and each includes the term 'simulation' (or a variation) in its abstract and in the body of the paper. Figure 1 summarizes the information in column eight of Table 1 by showing the number of empirical studies by discipline. Research in Management, Organizational Behavior, and Strategy number roughly the same with Management dominating the total prior to 1990 (four out of nine). Most of the Organizational Behavior and Strategy studies were published post-1990 and the two finance-related articles were the last two published in AMJ (Seo & Barrett, 2007; Seo, et al., 2010).

METHODOLOGY AND FINDINGS

In this section the focus is on summarizing the methodology and findings from the empirical studies beginning with the work of Wynne & Dickson (1975). Several dimensions are reviewed including: sample size and composition; research variables; and data analysis.

SAMPLE SIZE AND COMPOSITION

Table 2 presents three sample characteristics of the simulation studies. In the nineteen empirical works there

Figure 1
Number of Simulation Studies by Discipline
in the Academy of Management Journal (Through Mid-2012)

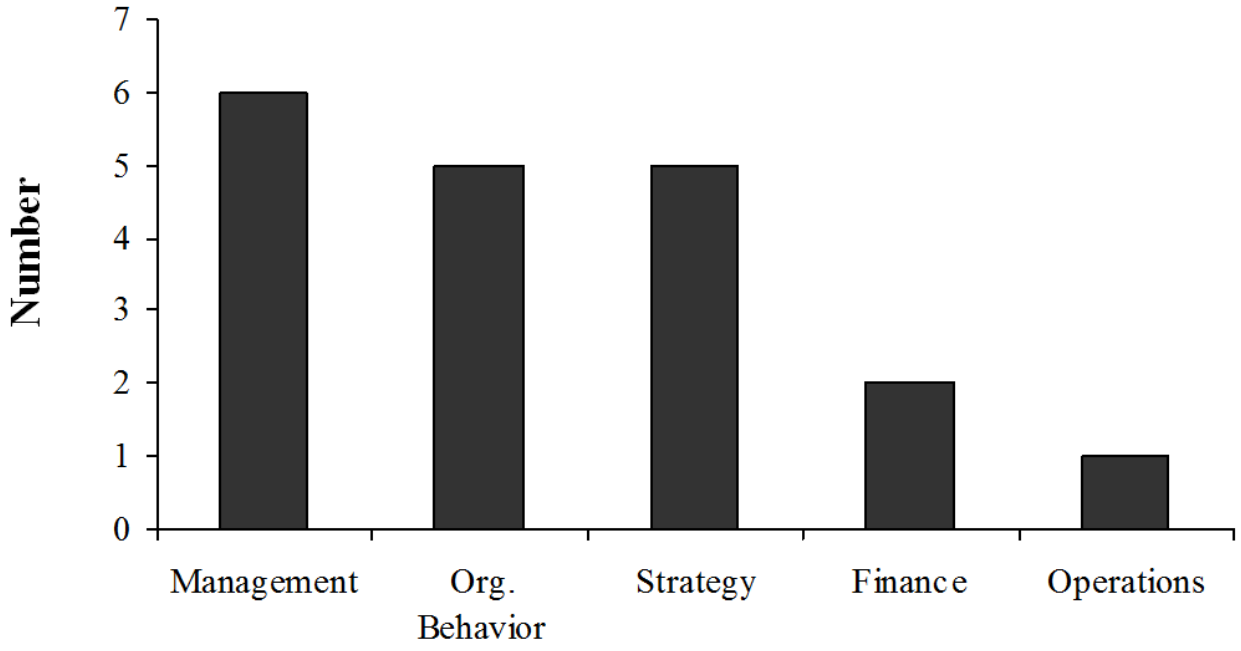

Table 2
Sample Size and Composition, Research Variables, and Data Analysis

Year	Author(s)	n	Individual (I) or Group (G)	Sample	Research Variables	Data Analysis
1975	Wynne & Dickson	24	I	Managers	Decision Information System, Manager-Technology Relationship	Mann-Whitney Test, ANOVA, Regression
1975	Aggarwal & Dhavale	NA	NA	Product Data Set	Inventory Costs, Product Demand	ANOVA
1984	Stahl & Zimmerer	42	I	Executives	Acquisition Decision, Strategy Implementation	Regression
1985	Liden & Mitchell	298	I	Undergraduates	Feedback – Performance Relationship	ANOVA
1985	Gladstein & Reilly	23	G	MBA Students	Organization Threats, Group Processes, Stress Perception	MANOVA
1985	Smith, et al.	38 32	I I	Managers Undergraduates	Organization Life Cycle, Top Management Priorities	Factor Analysis, MANOVA, ANOVA
1989	Dugan	52	I	MBA Students	Manager-Subordinate Relationship, Performance Appraisal	t-test; Z-Score, Chi-Square
1989	Gersick	8	G	MBA Students	Task Processes, Decision Making	Inter-Rater Reliability
1989	Karambayya & Brett	23	G	MBA Students	Dispute Resolution	Factor Analysis, Correlation, Regression
1990	Earley, et al.	85	I	Undergraduates	Goal Setting, Feedback, Performance	Regression
1991	Chesney & Locke	132	I	Undergraduates	Goal Setting, Strategy Formulation, Performance	Correlation, Factor Analysis, Regression, Z-Scores
1999	Waller	10	G	Flight Crews	Information Collection, Task Management, Performance	Correlation, ANOVA, MANOVA, Logit Analysis
2001	Knight, et al.	88	G	Undergraduates	Goal Difficulty, Strategic Risk, Team Efficacy, Incentives, Performance	MANCOVA, Regression
2004	Seijts, et al.	170	I	Undergraduates	Goal Setting, Goal Orientation, Self-Efficacy, Performance	Z-Scores, ANOVA, Correlation, Chi-Square, Regression
2005	Boone, et al.	44	G	Trainees	Locus of Control, Team Leadership, Performance	ANOVA, Cronbach's Alpha, Chi-Square, Regression
2006	Ellis	97	G	Undergraduates	Stress, Team Interaction, Performance	Correlations, ANOVA, MANOVA, ANCOVA
2006	Mathieu & Schulze	29	G	Undergraduates	Group Processes, Team Attributes, Performance	Correlations, Factor Analysis, Regression
2007	Seo, M. & Barrett	101	I	Investors	Emotions, Decision Making, Performance	Correlations, Path Analysis
2010	Seo, M., et al.	101	I	Investors	Framing Effect, Risk Taking, Performance	Correlations, Regression

are twenty samples including one with product data (Aggarwal & Dhavale, 1975), nine with individuals, eight with groups, and one with both individuals and groups (Smith, et al., 1985). Of the eleven samples with 'Individuals' sample size ranges from 32 (Smith, et.al., 1985) to 170 (Seijts, et al., 2004) with the average at 98. Post-2000 the average increases to 124 (three studies). In studies involving 'Groups' sample size ranges from 8 (Gersick, 1989) to 97 (Ellis, 2006) with the average at 40. Since 2000, average sample size with groups increases to 65 (four studies).

The earliest articles in AMJ are dominated by studies of individuals. The first study of groups was published in 1985 and involves MBA students (Gladstein & Reilly, 1985). After 1989 no MBA students are in the sample of any study reviewed here. Samples since that year include either undergraduates (60%) or professionals (40%). Of all works involving undergraduates (8) five study individuals while three focus on groups. Studies of groups occur after 2000, focus on teams of 3-4 members, and involve 29 (Mathieu & Schulze, 2006) to 97 (Ellis, 2006) groups. Samples of professionals include managers, executives, flight crews, trainees, and investment club members. The two studies of investment club members have the same sample size (101) and two common authors (Seo & Barrett, 2007; Seo et al., 2010).

RESEARCH VARIABLES

Studies of individuals dominate the empirical research using simulations from 1975 through 1991 (7 of 10 studies). Moving from the earliest to the latest works in this period the variables studied include information systems (Wynne & Dickson, 1975), acquisition strategies (Stahl & Zimmerer, 1984), organization life cycle (Smith, et al., 1985), feedback (Liden & Mitchell,1985), the manager-subordinate relationship (Dugan, 1989), and goal setting (Chesney & Locke, 1991; Early, et al., 1990). After 1991only 3 of 8 studies involve individuals and all examine the relationship between 'performance' and other variables such as 'goal setting and orientation' (Seijts, et al., 2004), 'emotions' (Seo, M. & Barrett, 2007), and 'risk taking' (Seo, M., et al., 2010).

Early studies involving groups (1966-1989) examine organization threats and stress (Gladstein & Reilly, 1985), task processes (Gersick, 1989), and dispute resolution (Karambayya & Brett, 1989). Later studies (1999–2006) focus on group performance as it relates to information and task management (Waller, 1999), goal difficulty and incentives (Knight, et al., 2001), locus of control and leadership (Boone, et al., 2005), stress (Ellis, 2006), and group processes and attributes (Mathieu & Schulze, 2006).

Table 3 summarizes detail from Table 2 and shows the most frequently studied constructs, number of studies in which the constructs are examined, and span of years over which the studies are published. Regardless of sample composition (individual or group) most studies (67%) published in AMJ involving simulations examine 'performance'.

DATA ANALYSIS

The last column of Table 2 lists the statistical test(s) conducted in each study. Regression is the most common analysis (53%) followed by ANOVA and Correlation (42% each). Detail about each method and frequency of use is provided in Table 4.

Some tests were used only once including ANCOVA, Cronbach's Alpha, Inter-Rater Reliability, Logit Analysis, MANCOVA, Mann-Whitney Rank Order, and Path Analysis. Excluding the Z-Score, tests used in more than one study are used about as often to analyze individual data as group data. The Z-Score was used in a total of three studies involving individuals. In the seven works since 2000 Regression and Correlation dominate the statistical methods with one or both used in each study.

AMJ FINDINGS AND CITATIONS IN ABSEL PROCEEDINGS

Findings from all twenty AMJ articles are presented in Table 5. In the studies involving groups, significant findings add to our understanding of information collection and/or processing (five studies), group processes (three studies), stress (two studies), leadership (one study) and goal difficulty (one study). In studies of individuals, significant results are found in the areas of decision making (four studies) personality characteristics (four studies), information processing (three studies) and goal setting (three studies).

Building on the analysis conducted above an obvious 'next step', and the second goal of this paper, is to tie the simulation studies in AMJ to ABSEL research. Proceedings from all ABSEL meetings are published in Developments in Business Simulation and Experiential Learning. (Smith

Table 3
Constructs, Frequency, and Time Span

Constructs	Frequency	Time Span
Performance	12	1985 - 2010
Group Processes/Decision Making	6	1985 - 2007
Goal Setting	4	1990 - 2004
Info. Systems/Info. Collection	2	1975 - 1999
Strategy	2	1984 - 1991

Table 4
Type and Frequency of Statistical Tests

Year	Author(s)	Individual (I) or Group (G)	ANCOVA	ANOVA	Chi-Square	Correlation	Cronbach's Alpha	Factor Analysis	Inter-Rater Reliability	Logit Analysis	MANCOVA	Mann-Whitney Rank Order	MANOVA	Path Analysis	Regression	t-Test	Z-Score
1975	Wynne & Dickson	I		X								X			X		
1975	Aggarwal & Dhavale	NA		X													
1984	Stahl & Zimmerer	I													X		
1985	Liden & Mitchell	I		X													
1985	Gladstein & Reilly	G											X				
1985	Smith, et al.	I		X				X					X				
1989	Dugan	I			X											X	X
1989	Gersick	G							X								
1989	Karambayya & Brett	G				X		X							X		
1990	Earley, et al.	I													X		
1991	Chesney & Locke	I				X		X							X		X
1999	Waller	G		X		X				X			X				
2001	Knight, et al.	G									X				X		
2004	Seijts, et al.	I		X	X	X									X		X
2005	Boone, et al.	G		X	X		X								X		
2006	Ellis	G	X	X		X							X				
2006	Mathieu & Schulze	G				X		X							X		
2007	Seo, M. & Barrett	I				X								X			
2010	Seo, M., et al.	I				X									X		
	Total	19	1	8	3	8	1	4	1	1	1	1	4	1	10	1	3

(ed.), 2012). Since the 2000 ABSEL meeting attendees receive a CD containing the papers presented at the current meeting plus all papers ever presented at an ABSEL meeting. As of March 2012 the total number of conferences included in this resource was thirty-nine. Known to ABSELers as the Bernie Keys Library (BKL), the CD contains text-searchable copies of all papers plus two additional resources – the Guide to Business Gaming and Experiential Learning (Gentry, 1990) and the Journal of Experiential Learning and Simulation. For more than a decade now the BKL has become an invaluable tool for those conducting research on business simulations and experiential exercises.

To verify if there is a link between the research in AMJ and that presented at ABSEL a search of the BKL would reveal if and how often studies from AMJ are referenced in the work presented at ABSEL's meetings. As indicated in the last column of Table 5, of the twenty AMJ articles reviewed for this paper a total of six were cited by twelve research teams. These results span thirty-nine years and roughly 2,000 papers. The AMJ article most cited (four times) studied group information processing facing a threat and time pressure (Gladstein & Reilly, 1985). The second most cited work (Seijts et al., 2004) examined individual goal setting and performance in light of task complexity and information.

An additional search of the BKL provided the number of papers whose title contains any of the primary constructs examined in the AMJ literature. The six main variables along with how frequently they appear in the titles of ABSEL papers are noted in Figure 2.

'Information' and 'Leadership', each with thirty-six occurrences, were the variables most often found in the titles of ABSEL papers. A distant third is 'Decision Making' with 'Personality' and 'Goal' closely following. The least frequently found variable, 'Stress', was in the title of five papers.

DISCUSSION AND SUGGESTIONS FOR FUTURE RESEARCH

The purpose of this paper is to provide a review of the simulation literature found in one of the most prestigious journals in management, the Academy of Management Journal. Identifying relevant articles was based on the appearance of the word 'simulation' in either the title of the work or in the abstract. This criterion resulted in twenty papers whose variables, methods, and findings are summarized above. Since 1990 the term 'simulation' has come to mean one thing – a 'computer-based program'. Considering the complexity of the business environment computerized business simulations help to model relationships, provide a convenient method of processing decisions, and generate large amounts of feedback. These features make this tool appealing to both instructors and players and helped increase the use of simulations to teach business concepts and conduct research in every discipline. The following paragraphs discuss the findings of this paper and offer suggestions for future research by ABSEL members.

Based on average sample size from AMJ over the last thirty-seven years there is an upward trend in the numbers. Samples involving individuals now average close to 100 while for groups the number is at or above 60. For most ABSEL members these numbers are reasonable, especially if teaching undergraduate students. Teaching large sections of a course or several smaller sections of the same class can help get the sample size to the desired level. MBA students

Figure 2
Frequency of AMJ Constructs in the Title of ABSEL Papers

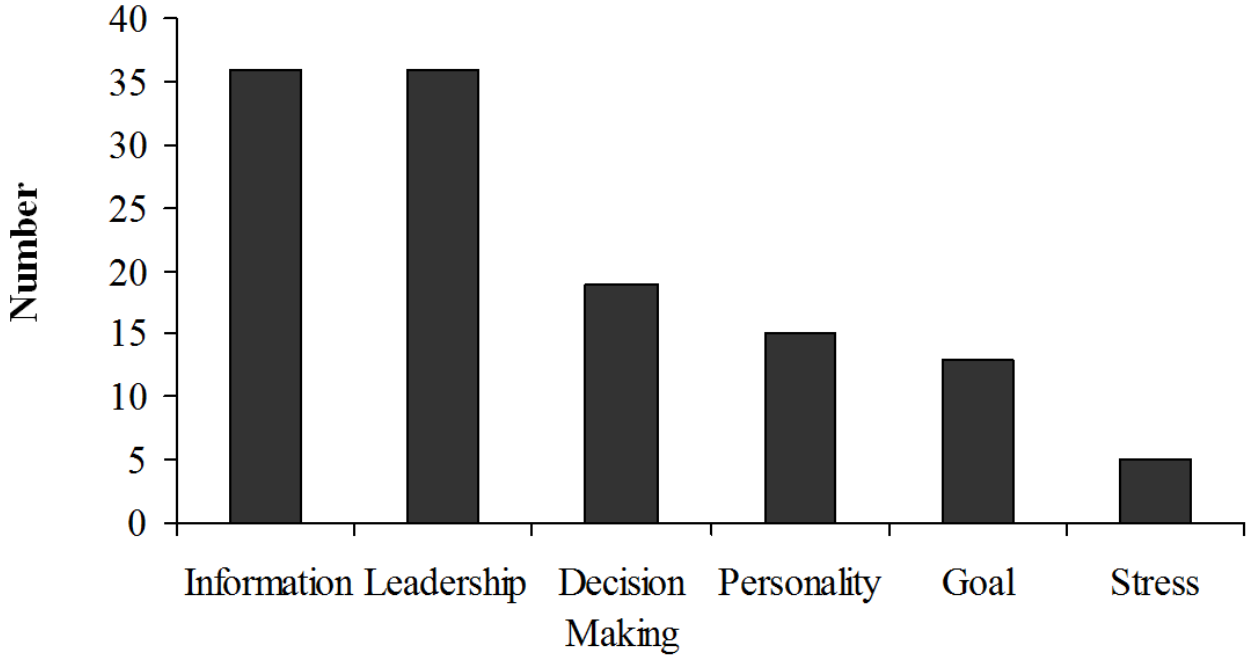

Table 5
AMJ Findings and Citations in ABSEL Proceedings

Year	Author(s)	Computer Simulation/Exercise	Individual (I) or Group (G)	Findings	Citations in ABSEL Proceedings
1966	Meinhart	NA (Theoretical)	NA	Thinking can be explored with the use of computer models; Management scholars and behavioral scientists may benefit from their use.	-
1975	Wynne & Dickson	Simulation – Commodity Management Simulator	I	Personality characteristics are associated with lower costs in a Man-Machine Decision Information System (MMDIS).	-
1975	Aggarwal & Dhavale	Simulation - The Distribution System Simulation (Connors, et.al., 1972)	NA	Demand is significant factor in Inventory and Carrying Costs; Interaction Effect present; Cost Structure affects Reordering Costs; Lead Time explains No. of Orders.	-
1984	Stahl & Zimmerer	Exercise	I	Acquisition decision is linear model; Criteria on acquisition checklist not equally weighted; Decision makers had poor insight into their acquisition decision making process.	Wolfe & Jackson (1989)
1985	Liden & Mitchell	Exercise	I	Specific feedback preferred over nonspecific; Feedback attributing poor performance to external causes preferred over internal; Nonspecific feedback preferred over attributing poor performance to internal causes.	-
1985	Gladstein & Reilly	Simulation – Tycoon (Amos Tuck School of Business, 1973)	G	Increased threat and time pressure related to stress and information processing in groups; Interaction effect of threat and time pressure on stress level.	Dickson, Gentry, & Burns (2004); Gosenpud & Wolfe (1988); Wolfe (1991); Wolfe & Jackson (1989);
1985	Smith, et al.	Exercise and Simulation – The Organizational Game (Miles, R.H., & W.A. Randolph, 1979)	I	Importance of technical efficiency, organizational coordination, and political support vary over an organization's life cycle.	Dickinson, Gentry, & Burns (2004); Wolfe & Castroviovanni (2006)
1989	Dugan	Exercise	I	Role alone does not explain communication patterns; Attribution of causes of poor performance influences interactions and management decisions.	-
1989	Gersick	Exercise	G	Pacing and transition matter when performing tasks; Half-way point is important in transition.	-
1989	Karambayya & Brett	Exercise	G	Role of third party has implications for resolution of disputes and perceived justness of resolution.	-
1990	Earley, et al.	Simulation (Northcraft & Early, 1989)	I	Feedback moderates relationship between goal setting and individual performance.	-
1991	Chesney & Locke	Simulation – Tempomatic IV (Scott & Strickland, 1980)	I	Goal difficulty and choice of strategies are related to individual performance; On complex tasks, strategies have stronger effect than goal difficulty.	Schumann, Scott, & Anderson (1994)

1999	Waller	Simulation – NASA Flight Simulator	G	Information collection and transfer, timing of task prioritization, and timing of task distribution are positively related to group performance.	-
2001	Knight, et al.	Simulation – BOLO:The Multi-Player Battle Game (Cheshire, S. 1993)	G	Goal difficulty and incentives are related to strategic risk and performance; Team efficacy and strategic risk mediate some relationships.	-
2004	Seijts, et al.	Simulation – Cellular Industry Business Game (Audia, et. al. 2000)	I	Task complexity influences goal setting-performance relationship for individuals; Self-efficacy and information mediate the relationship.	Anderson & Lawton (2009); Anderson, Lawton, & Kaliske (2010); Anderson, Lawton, & Wellington (2008)
2005	Boone, et al.	Simulation – International Management Competition (Dutch multi-period management simulation; in-company training device)	G	Moderating variables such as locus of control, team leader selection and information acquisition influence relationship between team attributes and performance.	-
2006	Ellis	Simulation – Distributed Dynamic Decision-Making Simulation Phase I (Miller, Young, Kleinman, & Serfty, 1998)	G	Stress-Performance relationship partially mediated by team information processes and retrieval.	-
2006	Mathieu & Schulze	Simulation – Capsim (www.capsim.com)	G	Formal planning by teams positively related to interpersonal processes and performance; More knowledgeable teams performed better; Quality of formal plan positively related to performance.	Dieguez-Barreiro, Gonzalez-Benito, Galende, & Kondo (2011)
2007	Seo & Barrett	Simulation – Author-Developed Internet-Based Investment Simulation	I	Individuals with feelings of greater intensity had stronger performance; Those who kept their feelings from affecting their decisions performed better; Those who understood their feelings did better.	-
2010	Seo, et al.	Simulation – Author-Developed Internet-Based Investment Simulation	I	Risk Taking is related to Financial Gain/Loss; Feelings attenuate risk taking and loss relationship.	-

may pose more of a challenge for some since classes are often smaller and researchers may not have multiple sections of a course in which a computer simulation is used. In addition, computer simulations may not be used as often in MBA programs as in undergraduate classes.

Most simulation studies published in AMJ are focused on management, organizational behavior, and strategy. These tie nicely to the work by ABSEL researchers examining variables such as 'information', 'leadership', and 'strategic choice'. As the number of fully web-based simulations grows and the ease with which an administrator can adjust the simulation environment there will be more opportunities to conduct both basic and applied research using this tool. For example, some simulations allow individual users to run the simulation on two tracks - as part of a group (with a team for a grade) and as an individual competing against computer-generated competitors (repeated attempts permitted) (Scott, T.W., Kaliske, J.A., & Anderson, P.H., 2012). This last feature, individual play, lends itself to studying strategy choice, information selection, decision making, stress, etc. Other simulations allow instructors to run and rerun several periods in 'benchmark' mode (Smith & Golden, 2012). Researchers may be able to use this feature to run and then rerun different sets of decisions - all from the same starting point. In the end the challenge will be to frame the research question in a way that links the variables of interest to the output available from the software package.

ABSEL researchers focusing on studying business simulations must show evidence of understanding the theory published in the most prestigious business journals and include this theory as citations in their work. This will strengthen the rationale for their studies plus lend support for how their research extends the body of knowledge in the discipline. While a few AMJ articles were cited in ABSEL's proceedings a number were not. Those not referenced include works on decision making, goal setting, feedback, and personality – all constructs that appear in works published in the BKL. In terms of statistical analysis the research published in AMJ shows that the most common tests are regression and correlation. These are basic techniques that should, at a minimum, be provided in most empirical research submitted to ABSEL. Other statistical tests should be considered and used when warranted.

CONCLUSION

ABSEL has an impressive history of research in and experience with business simulations. Building on the organization's tradition that spans some forty years, there is an opportunity to strengthen its contributions to the field of management by linking its research to that published in the Academy of Management Journal as well as other sources such as Administrative Science Quarterly, the Journal of Business, Management Science, and Decision Sciences. The use of business simulations in higher education is likely to continue to grow as the technology improves for both administrators and users. The studies reviewed here while limited to those with the word 'simulation' in the title and/or abstract include valuable sources for ABSEL researchers. In their 2005 article, Reyes, et al. suggest future research in business employ qualitative, quantitative, field, and laboratory methods. What a good fit with ABSEL!

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