STUDENT-MANAGER SURROGACY REVISITED: AN EMPIRICAL INVESTIGATION

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ABSTRACT

Mixed results of the extant student-manager surrogate research have led to a posteriori suggestion that task familiarity and circumstance specificity determine the suitability of surrogate. This study empirically tests such assertion a priori. The findings of this study lend support to the circumstance specificity hypothesis, not the task familiarity hypothesis.

INTRODUCTION

The use of university student subjects in research as surrogates for managerial subjects has long been debated in the academic literature (Wyld & Jones, 1997; Hughes & Gibson, 1991; Gordon, Slade, & Schmitt, 1986). Several studies have been conducted in various academic disciplines investigating this topic in business research, including accounting (Bean & D’Aquila, 2003), marketing (Corfman & Lehmann, 1994), and production scheduling (Remus, 1986, 1996). But just how far knowledge has come in addressing the use of student subjects in business research is suspect. At best, the results in the literature are mixed and the use of students as surrogates is both condoned and criticized. Nevertheless, the use of student subjects as surrogates for practicing professionals is very widespread. Although the use of students as experimental subjects has been criticized for external validity limitations, it yields practical advantages such as convenient access to data and minimal cost of data collection (e.g., Gordon et al., 1986). If students are proven to be reasonable surrogates for professionals, the advantages of student samples make large-scale longitudinal research designs with replications operationally feasible, allowing researchers to leverage the strengths of such research techniques.

The mixed findings resulting from student-manager surrogate research have led to an a posteriori suggestion that the suitability of using students as surrogates for managers in decision making is potentially dependent on certain factors such as circumstance specificity and task familiarity (Hughes & Gibson, 1991; Gordon et al., 1986). To explain circumstance specificity, we refer to the decision scenarios that the student and managerial subjects are faced with. Sometimes, students and managers may share similar decision patterns since they share common norms (e.g. social, demographic); these shared norms make the surrogate circumstance specific. Thus, the viability of surrogate is dependent upon the decision situation itself. Contrastingly, task familiarity refers to the internal skill sets or knowledge base shared among students and
managers. If managerial task familiarity is high within the student group, then they can exhibit similar decision patterns as their managerial counterparts. Some ways to increase task familiarity include education or repeated exposure to certain topics or activities (Ford & Hegarty, 1984; DeNisi & Dworkin, 1981).

As of yet, no empirical research has tested a priori whether the issue of circumstance specificity or task familiarity is more relevant in determining the appropriate usage of student subjects. Thus, in this study, we aim at empirically testing these two alternative hypotheses.

STATE OF THE LITERATURE ON SURROGACY

Whether college students can be used as surrogates for managers has provoked debate among scholars (e.g., Dobbins, Lane, & Steiner, 1988a, 1988b). A number of studies give support to the suitability of using students as surrogates for practicing managers. For example, Bateman and Seithaml (1989a) conducted repeated studies on R&D investment decision using undergraduate business students (in their first study) and practicing managers (in their second study) as experimental subjects and found that both studies yielded consistent results. Similarly, in marketing contexts, Roering, Schooler and Morgan (1976) found that the evaluations of marketing practices performed by undergraduate business students and business professionals yielded congruent results, leading to the suggestion that business students could be used as reasonably accurate surrogates for business professionals. Concerning the use of graduate students, Corfman and Lehmann (1994) found no significant difference between MBA students and marketing managers in their pilot study of the Prisoner’s Dilemma in advertising budgeting decisions. Remus (1986) found that graduate business students and line managers attained approximately the same cost efficiency when solving production scheduling problems, and Wyld and Jones (1997) found no significant difference between non-managerial students and those with managerial roles in organizations in their ethical decision making.

In spite of the research supporting the use of student surrogates, several studies contest such usage. For example, Barr and Hitt (1986) found that in human resources contexts, the decision process of undergraduate students and managers were quite different. Students and managers used different criteria in making decisions pertaining to job applicant selection and compensation, and students tended to rate job applicants more highly and offered much higher starting salaries than managers. Similarly, Burnett and Dunne (1986), in a comparative marketing study of four subject groups (i.e. undergraduate students, their parents, consumer panel members, and comparatively aged non-students), reported that both in terms of theory development and answer comparisons, students behaved differently from the other groups. Adopting the use of graduate students is also subject to debate. It has been argued that due to their work experience, graduate business students have a closer response behavior to practicing managers than traditional students (Zahra & LaTour, 1986). However, Frederickson (1985) found that MBA students and executives had different processes of making the same strategic decisions, possibly due to the recent training the MBA students received in picking up cues in case analysis. Also, Moskowitz (1971) found full-time business graduate students to be less rational and less risk-taking than true R&D managers in information processing and choice behavior. As a result, he questions the use of student subjects as surrogates in business-related, decision-making studies.

A few studies provide inconclusive results. Ashton & Kramer (1980) found that undergraduate auditing students and professional auditors had similar cue utilization patterns in
evaluating payroll cases in approximately two-thirds of the cases, but the experts showed more consistency in judgments and insights. And Remus (1996) did a three-way comparison between undergraduate business students and his previously reported MBA student/manager groups (Remus, 1986) on production scheduling problems and found that the undergraduate students did not behave similarly to the MBA students or managers. They “made more costly decisions, used less effective decision heuristics, and were more erratic in their decision making” (Remus, 1986: 93). However, the MBA students and professional managers behaved similarly.

At best, a comprehensive perusal of the empirical research examining the student-manager surrogacy collectively has produced mixed findings, leading some scholars to suggest a contingency approach – whether students can be surrogates for practicing managers is context-dependent and contingent on either unique circumstance specificity or students’ knowledge and familiarity with assigned managerial tasks (Hughes & Gibson, 1991; Gordon et al., 1986).

HYPOTHESIS DEVELOPMENT

The streams of mixed findings in the surrogacy literature have led to two alternative explanations: (1) task familiarity and (2) circumstance specificity. Whereas these two thrusts share the contingency-based arguments, they differ in terms of the mechanisms that drive students and managers to show similar decision patterns. The task familiarity thesis suggests that student-manager surrogacy is more accurate particularly when students possess knowledge about the assigned managerial tasks or are familiar with the tasks (e.g., Ford & Hegarty, 1984; Gordon et al., 1986). From this perspective, training and education play a major role in evolving students into more viable surrogates for practicing managers in the decision process since they acquire the necessary knowledge, become familiar with the tasks, and then use the knowledge as the basis for their managerial decisions in a similar fashion to practicing managers (DeNisi & Dworkin, 1981; Ford & Hegarty, 1984). This logic suggests a testable hypothesis as follows:

Hypothesis 1: Students who acquire knowledge relevant to the decision at hand through training or education will demonstrate a similar decision pattern to that of practicing managers whereas the students who do not acquire such knowledge will not.

From the circumstance specificity perspective, whether students can be surrogates for managers in the decision process, is contingent on specific decision circumstances (e.g., Burnett & Dunne, 1986; Hughes & Gibson, 1991). One rationale behind the circumstance specificity thesis is that in some decision circumstances, students and managers have a similar decision pattern because certain factors that they share such as social norms embedded in the fabric of society ultimately influence their decision. Hence, when the decision is influenced by norms that are held by students as well as managers, the decision patterns of students and managers converge. The above arguments lead to the following hypothesis:

Hypothesis 2: When the decision at hand can be influenced by norms that are broadly prescribed by the society at large, students and practicing managers will have a similar decision pattern.

The above hypotheses were tested in the context of Joshi and Arnold’s (1998) scenario-based experiment in which industrial purchasing professionals were participants. Their focus of study was to investigate how a buyer’s dependence on a supplier and relational norms in the buyer-supplier relationship could influence the buyer’s compliance. They found (1) that at a high degree of relational norms, the buyer’s dependence on a supplier was positively related to the buyer’s compliance, and (2) that at a low degree of relational norms, the buyers’ dependence
on a supplier was not related to the buyers’ compliance. This study replicates Joshi and Arnold’s study, using students in senior-level Operations Management (OM) courses and those in non-OM junior-level introductory business courses as experimental participants. The comparison between the findings of this study and those of Joshi and Arnold’s will unveil whether the proposed hypotheses are supported.

To test Hypothesis 1 (task familiarity thesis), we regarded students in senior-level OM courses as those having knowledge relevant to the decision at hand since they had been exposed to various concepts pertaining to manufacturing, purchasing and supply chain management. In contrast, we regarded students in junior-level non-OM courses as those without relevant knowledge to the decision at hand, given that those non-OM courses do not emphasize these relevant issues. Thus, OM students, referred to as those with high task familiarity, would have a similar decision pattern to that of managers while their non-OM counterparts, referred to as those with low task familiarity, would not. Using two key findings of Joshi and Arnold as the points of comparison, we further refine Hypothesis 1 into two specific hypotheses as follows:

*Hypothesis 1a:* In the high relational norms scenario, the buyer’s dependence on the supplier is positively related to the buyer’s compliance in the OM student sub-sample (i.e., similar to Joshi and Arnold’s findings from the manager sample), whereas it is not in the non-OM student sub-sample.

*Hypothesis 1b:* In the low relational norms scenario, the buyer’s compliance is independent of the buyer’s dependence on the supplier in the OM student sub-sample (i.e., similar to Joshi and Arnold’s findings from the manager sample), whereas it is not in the non-OM student sub-sample.

To test Hypothesis 2 (circumstance specificity thesis), we contend that high relational norms are cooperative in nature (e.g., Cannon & Perreault, 1999) and promote cooperative efforts among individuals (e.g., Macneil, 1980). Such cooperative norms are considered important to the function of groups, community and the society at large (e.g., Ellickson, 1991; Scalet, 2006), and tend to be fostered by various organizations and communities (e.g., Deutsch, 1949; Johnson & Johnson, 1989). Thus, individuals under the influence of such norms tend to have a similar decision pattern regardless of their professional background (i.e., practicing managers, students, etc.). Therefore, we expect that in the high relational norms contexts, OM students, non-OM students and practicing managers have a similar pattern of decision making.

On the contrary, low relational norms are more competitive in nature, as they reflect competitive bargaining and short-term orientations (e.g., Kaufmann & Dant, 1992). Such competitive-oriented norms may be subscribed to by individuals in certain professions (e.g., business professions), but may not be broadly promoted in society. In this circumstance, the decision patterns of individuals can differ with their professional background and experience. As such, we expect the decision pattern of practicing managers to be different from those of OM and non-OM students. Realizing that compliance may invite more opportunistic behaviors from the supplier, practicing managers in the high dependence and low relational norms situation may be reluctant to comply with the supplier’s request (Joshi & Arnold, 1998). Unlike practicing managers, students generally do not embrace the competitive norms; therefore, as their dependence on the supplier increases, students may become submissive, try to avoid conflicts and are more likely to comply with the supplier’s request than practicing managers. Based on this line of reasoning along with the two key findings of Joshi and Arnold as the points of comparison, we refine Hypothesis 2 into two specific hypotheses as follows:
Hypothesis 2a: In the high relational norms scenario, the buyer’s dependence on the supplier is positively related to the buyer’s compliance in both OM and Non-OM student sub-samples (i.e., similar to Joshi and Arnold’s findings from the manager sample).

Hypothesis 2b: In the low relational norms scenario, the buyer’s dependence on the supplier is also positively related to the buyer’s compliance in both OM and Non-OM student sub-samples (i.e., different from Joshi and Arnold’s findings from the manager sample).

RESEARCH METHODS, DATA ANALYSIS, AND RESULTS

To test the proposed hypotheses, we replicated Joshi and Arnold’s (1998) experiment. Participants in this study were 521 students enrolled in senior-level OM courses and junior-level non-OM business courses at three different universities. As in Joshi and Arnold’s study, we randomly assigned participants into four groups based on a two-by-two experimental design of low vs. high relational norms and low vs. high dependence. Participants were asked to read a short business case, verbatim from the validated business scenario used in Joshi and Arnold’s study, in which they assume the role of a purchasing manager at a midsize electronic equipment manufacturer and are responsible for the purchase of microchips – an important component of the company’s product. Therefore, they need to purchase the microchips on a regular basis. At the end of the case, participants were provided with information indicating that the microchip supplier was involved in a labor dispute and temporarily unable to guarantee on-time delivery, which potentially caused their company problems in meeting delivery to customers. Participants were then asked to rate the nature of their reaction to the supplier’s call for their regular supply order and request for patience (See Appendix 1 of Joshi and Arnold’s article in Journal of Business Research, Volume 41, Issue 2, page 113 for the full description of the case).

In the data analysis, Participants’ Compliance was the dependent variable, which was also measured by Joshi and Arnold’s validated six-item instrument, consisting of questions such as “I would hang in there and wait for the labor dispute to be resolved” and “I would be continually looking out for another supplier to replace the existing supplier” (reverse coded). Factor analysis indicated that all six items were significantly correlated and loaded onto a single component with a Cronbach’s Alpha of 0.75. Therefore, we used the factor score as a single composite measure of Compliance. Relational Norms manipulation (coded as 1 and 0 for high and low degrees) was the moderating variable whereas the Dependence manipulation (coded as 1 and 0 for high and low degrees) was the independent variable in this study. In addition, control variables included the university location, and participants’ gender, ethnicity and years of managerial experience. In testing our proposed hypotheses, we divided our sample into two sub-samples based on the low and high degrees of relational norms. Then, in each relational norm sub-sample, we further divided the participants into OM and non-OM sub-samples. We then performed a regression analysis to examine the relationship between Dependence and Compliance under each of the different conditions of low and high Relational Norms in OM and non-OM sub-samples.

The results of multiple regression in the High Relational Norms/OM sub-sample indicated that after controlling for the above control variables, Dependence was positively associated with Compliance (p<0.01). This relationship was also significant (p<0.05) in the High Relational Norms/non-OM sub-sample. Since Dependence was positively associated with Compliance under the high Relational Norms condition in both OM and non-OM student sub-samples, Hypothesis 2a was supported, but Hypothesis 1a was not. In the Low Relational Norms/OM
sub-sample and the Low Relational Norms/non-OM sub-sample, the regression analysis results indicated that Dependence was positively related with Compliance significant at p<0.001 and p<0.01, respectively, thus supporting Hypothesis 2b, but not Hypothesis 1b. These results suggest that (1) when the supplier relationship is characterized by a high degree of Relational Norms, both OM and non-OM students appear to have a similar pattern of decision making as practicing managers, and (2) when the supplier relationship is characterized by a low degree of Relational Norms, both OM and non-OM students seem to have a vastly different pattern.

**DISCUSSION AND CONCLUSION**

Our results show that the undergraduate students studied appear to have similar decision patterns as practicing managers only in relational and cooperative circumstances, not in competitive circumstances. These findings substantiate circumstance-specific hypothesis (e.g., Hughes & Gibson, 1991), but not the task-familiarity hypothesis. Although the results suggest that circumstance specificity may supersede task familiarity in determining the appropriateness of student-manager surrogacy, task familiarity may still be an influencing factor. The students were more likely to comply than the managers in the low relational norms scenario. This difference may be due to students having less experience than practicing managers (Baack, Fogliasso, & Harris, 2000) and do not realize that compliance may invite more opportunistic behaviors from the exchange partner (Joshi & Arnold, 1998). In short, while certain decision circumstances do permit students to categorically be reasonable surrogates for practicing managers, other decision circumstances do not, which may call for the need to assess students’ task familiarity in determining the suitability of student-manager surrogacy.

Our findings provide three practical implications. First, this study makes a methodological contribution by unveiling that students can be used as reasonable surrogates for practicing managers in relational and cooperative business management contexts. The viability of convenient student samples may afford researchers in the relational contexts to use more rigorous research methods such as large-scale longitudinal research with replications. Second, management educators can use students in place of practicing managers in the process of developing managerial techniques and training programs, which can be applied in high relational and cooperative contexts of business management such as cooperative supply chains, customer relationship management and team building. Finally, our findings have a policy implication for journal reviewers. Our results show that the validity of student-manager surrogacy is circumstance-specific. Therefore, the use of student sample data in a study is not a sufficient ground for dismissing the validity of the study, and journal reviewers should closely examine the appropriateness of student-manager surrogacy to avoid both type I and type II errors.

This study still has some limitations, which provide directions for future research. First, future research may include MBA students to provide generalization and validation of these findings beyond undergraduate business students. Second, the research design can be strengthened if the amount of course-embedded knowledge acquired by students can be definitively determined. Finally, future research may examine the viability of student-manager surrogacy in various decision circumstances and collectively mobilize toward creating a directory of decision circumstances where student-manager surrogacy is viable. This type of directory will greatly benefit researchers regarding sample choice in decision-making research.

**REFERENCES AVAILABLE FROM THE AUTHORS**