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The experience and international diversity factors in computer-based marketing simulations

Abstract

The use of computer-based simulations in both undergraduate and graduate marketing courses has become commonplace. One result of their popularity has been an increase in the number of MBA students having previous experience with a business or marketing simulation as an undergraduate. Also, the proliferation of intensive English programs at American universities has led to increasing international diversity among MBA students at these universities. These phenomena have raised concerns that teams having an experienced member enjoy an advantage over those that do not, and that teams consisting solely of American students possess an advantage over those that contain foreign students. Businesses are also using simulations as part of sales and marketing management training where similar concerns apply. This study uses data collected from 47 teams over a 5-year period to examine whether these concerns are justified. The results suggest that having a team member with previous experience does not contribute significantly to simulation success and that international diversity among team members does not harm and may enhance performance.

Keywords: simulation, marketing simulation, computer-based simulation, international diversity, experience, MBA.

Introduction

There is no question that an increasing number of marketing professors are using computer-based simulations in their classrooms (Brooks, Burson and Rudd, 2006). Devasagayam and Hyat (2007) report that approximately 200 business simulations are available, and approximately 8,700 professors in close to 250 business schools across the US report using a simulation in at least one of their courses. Simulations are currently an integral part of classroom learning in use at 97% of AACSB schools (Baglione and Tucci, 2009). The corporate world has also adopted the simulation as an employee training tool (Jubelirer, 1992).

One result of the increased use of simulations is a situation where a school has adopted computer simulations into the marketing curriculum at both the undergraduate and graduate levels. This paper examines the use of different versions of the same simulation (the Marketplace simulation) at both levels with the strategic marketing version of the simulation being utilized in the undergraduate marketing strategy course, while the advanced strategic marketing version is used in the graduate marketing course. The two versions are very similar with the only major difference between them being the number of variables (i.e., number of markets, number and variety of product components, R&D features, advertising claims, sales incentives, etc.) the students must consider and incorporate into their decision-making.

For schools which retain a significant number of their undergraduates into their graduate program, one phenomena is that an increasing number of students who participated in the basic simulation exercise as an undergraduate experience it a second time (the advanced version) as a graduate student. One result of this trend is that teams in the graduate course often have an "experienced" member. This has raised questions as to whether teams having an experienced member enjoy an unfair advantage compared to those that do not. Thus, one purpose of this study is to determine whether having a team member with previous experience contributes to a team's simulation performance.

Furthermore, the increased numbers of international students in MBA programs has significantly increased the diversity of the students enrolled in such programs. In the vast majority of cases, these students speak English as a second language and their English language skills range from excellent to very poor. Thus, it is not unusual for internationally diverse teams in the graduate marketing course to experience difficulties working together due to communication problems and cultural differences. Hence, another purpose of the study is to determine whether international diversity negatively impacts the performance of a team compared to the teams consisting of only American students.

1. Literature review

Computer simulations are thought to be an effective way to teach students to develop solutions to problems, implement the solutions and experience the consequences of their actions (Hilton, 2006). Computer simulations allow students to experience the complexity of integrating multiple marketing inputs and dealing with the uncertainty inherent in making marketing decisions. They also allow students to see how marketing decisions impact a firm's performance (Brooks, Burson and Rudd, 2006). Business simulations have been shown to possess external validity in that simulation-based learning is correlated with various measures of career success, such as higher incomes and more job promotions (Baglione and Tucci, 2009; Wellington, Faria and Hutchinson, 2009). In addition, companies use marketing simulations as a tool for sales and management training as they offer a realistic framework for making decisions with rapid feedback on results (Jubelirer, 1992). Other studies have demonstrated a correspondence between the characteristics of successful business executives and successful simulation game performers (Wellington et al., 2009). Previous research has also shown that simulation performance is consistent in the sense that teams that perform well on a simulation game are generally able to repeat their performance (Wellington and Faria, 1996; Whitely, 1993).

Previous studies have examined numerous variables as possible influences on simulation performance. These include personality characteristics, previous academic performance, team member demographic differences (ethnic origin, gender, etc.), team heterogeneity, team cohesiveness, team competitive practices and level of competitiveness, locus of team control, previous work experience, preference for group work, level of motivetion, method of team formation, team size, and time pressure (Wellington et al., 2009; Anderson, 2005; Faria, 2001; Schoenecker, Martell and Michlitsch, 1997; Vaidyanathan and Rochford, 1998). These studies frequently have produced mixed findings. For example, Vaidyanathan and Rochford, (1998) discovered a significant positive correlation between exam scores (the average student grade on objective exams taken in the course based on percentage of correct responses) and simulation performance, suggesting that "better" students tend to have better simulation results. However, others (Anderson and Lawton, 1992; Washbush and Gosenpud, 1993) reported no relationship between performance on exams and simulation performance (Wellington et al., 2009). Likewise, a few studies that used average team GPA as the academic performance measure reported a positive relationship with simulation performance (Wolfe and Chanin, 1993; Wolfe and Keys, 1990), but several others (Glommes, 2004; Schoenecker et al., 1997; Wellington and Faria, 1996) found no significant relationship. Early studies (Biggs, 1975; Etnyre & Wolfe, 1975) reported that more cohesive teams performed better in simulations, but more recent studies (Anderson, 2005; Carron, Brawley, Bray, Eys, Dorsch, and Estabrooks, 2004), found that cohe-sive teams performed more poorly than those that did not share a particular closeness among team members. Anderson (2005) noted that a tendency for these types of teams to engage in a groupthink mentality may have contributed to their poorer performance.

In addition to some equivocal research results, some studies have found that variables one might intuitively associate with good simulation performance exerted no significant influence or even a negative influence. For example, previous findings suggest that instructors should not assume that a preference for group work among team members will positively influence a team's performance. Vaidyanathan and Rochford (1998) discovered a weak but significant (r = -.2398) negative correlation between preference for working with others and simulation performance, when performance was adjusted for peer evaluations, suggesting that teams consisting of students who prefer working in groups actually perform more poorly that those who prefer working individually. Likewise, Anderson (2005) reported that independence (the degree to which team members worked better on their own than with a team) did not influence simulation performance. Other variables found to be insignificant factors in simulation performance include: work experience (Anderson, 2005) and level of motivation (Butler and Parasuraman, 1977; Vaidyanathan and Rochford, 1998).

While some studies have produced surprising or even confusing results, several variables that have been shown to influence simulation performance are quite intuitive. Studies that focused on teams' utilization of strategic management practices have generally produced positive results (Wellington et al., 2009). For example, Schoenecker et al. (1997) found that strategic consistency (the degree to which a team follows a consistent strategy throughout the simulation) is positively associated with performance among both undergraduate and graduate students. Anderson (2005) found that opportunistic practices (a team's ability to identify opportunities coupled with the fortitude to exploit them) and hypothesis driven thinking (a student's perception of the team's ability to direct thought to potential future actions and make decisions based on potential future outcomes) are positively associated with simulation performance. Wolfe and Luethge (2003) discovered that student groups that were highly engaged in the simulation exercise performed better than "copycat" groups that merely reacted to events in the simulation by copying the leader's strategies, and uninvolved teams who made decisions with little or no conscious effort. Wellington et al. (2009) found that students who ranked highly in competitiveness tended to perform better in simulation games. Also, not surprisingly, studies have shown that teams that enjoyed the simulation experience (Anderson, 2005) and those that were satisfied with their team (Schoenecker et al., 1997) generally performed better. In both cases these were two-way relationships, so it remains uncertain whether performance resulted from enjoyment and team satisfaction or vice versa. On the negative side, Schoenecker et al. (1997) discovered that group dominance (the degree to which a team is dominated by one member) exerted a detrimental influence on simulation performance. Other studies involving team locus of control produced similar results (Faria, 1991).

Of particular significance for the current study are results from previous research regarding the effects of team diversity on simulation performance. Diversity has been defined in terms of both demographic diversity (Schoenecker et al., 1997) and diversity of ideas (Anderson, 2005). Despite the reality of increasing diversity of work groups in both business schools and the workplace, the results of these studies and others (Kumar, Subramanian and Norris, 1991) suggest that diversity does not necessarily enhance team performance. In fact, it appears that quite the opposite may be true. In the aforementioned studies, diversity variables were shown to have either no effect on simulation performance (Schoenecker et al., 1997) or a negative influence (Anderson, 2005; Kumar, Subramanian and Norris, 1991). The "performance losses" associated with diverse teams have been mainly attributed to communication difficulties among team members. While the studies focusing on demographic diversity have defined it in terms of age, sex, and racial differences, the authors are unaware of any study that has looked specifically at international diversity. This is particularly important given a US workplace that is expected to become increasingly multi-cultural over the next 20 years (Schoenecker et al., 1997).

In summary, previous studies have examined the link between a number of important variables and simulation performance. However, there remains a need to more closely examine factors influencing group and individual performance (Vaidyanathan and Rochford, 1998). The current study attempts to fill some of the knowledge gaps in this area by exploring new factors that are relevant to today's academic and professional environments, and reexamining some areas where previous research has produced ambiguous or even counterintuitive results.

2. Hypotheses

The first hypothesis of this study tests the effect of having a team member with previous simulation experience on simulation performance. Previous studies (Wellington and Faria, 1996; Whitely, 1993) have shown that good simulation performance is consistent over time. Specifically, students who have succeeded previously in a simulation may possess knowledge, skills and/or characteristics that would increase their chances of repeating their success. It seems likely that this would be especially true when the team is playing the same or a similar simulation. On the other hand, it is also likely that not all MBA students who played the simulation as an undergraduate had a successful experience. It is also possible that even when a student was a member of a successful team as an undergraduate, that student had little to do with his team's success and thus gained nothing from the experience that could potentially have yielded a future advantage. Team dynamics or other factors could also have prevented the potential advantage of previous experience from manifesting in simulation results. Thus, the hypothesis is stated non-directionally.

H1: Having at least one team member with previous simulation experience influences a team's overall performance score.

The second major hypothesis concerns team diversity. Previous simulation research has generally supported the idea that diversity among team members can hinder team performance (Anderson, 2005; Schoenecker et al., 1997). As noted previously, diversity has been defined differently in different studies. At least one study (Anderson, 2005) focused on diversity of ideas, whereas others have focused on diversity in terms of demographic characteristics such as race or gender (Faria, 2001). Both conceptualizations have been shown to be negatively related to simulation performance. Even though this study considers a different form of diversity (international), we state the hypothesis directionally based on our own observations and the previous research findings. Having a mix of international and American students on a team potentially contributes to performance losses by the team.

H2: Having a team consisting of a mix of American and international students negatively influences a team's overall performance score.

Although not a major focus of this study, it is noteworthy that some previous studies reported no significant relationship between GPA and simulation performance. This is a counter-intuitive result and contradicts the findings of Vaidyanathan and Rochford (1998), who discovered a significant correlation between exam performance and simulation performance, suggesting that "better" students tend to have better simulation results. It would seem that a shared hope among business school instructors should be that the knowledge and skills taught in their courses would lend themselves to business success. If, as the previous research suggest, simulation results reflect the ability of students to think strategically and successfully apply business skills, there should be some correspondence between mastery of the requisite knowledge and skills and their successful application. We include GPA on this basis and to rule out its potential effects as a control variable. However, in keeping with the mixed results regarding academic performance variables, we state the hypothesis non-directionally.

H3: Average team GPA will exert a significant influence on a team's overall performance score.

The final hypothesis considers the effort students put into the simulation exercise as measured by the amount of time they spend with it. Although it may seem intuitive that teams spending more time on a task should perform better than those who spend less time, previous simulation research does not support this and some organizational behavior research suggests that just the opposite may be true (Faria, 2001). An inordinate amount of time spent analyzing data and making decisions may reflect a team that lacks focus and leadership, or that is experiencing other problems that lead to inefficient use of time (Cadotte and Bruce, 2003). Since there is no a-priori expectation based on previous simulation research, we state the hypothesis non-directionally.

H4: There is a relationship between the amount of time a team spends on-line with the simulation and a team's overall performance score.

3. Research method

The sample consisted of MBA students at a midsized private university located in the southeastern US. Data were collected from 48 teams in 10 course sections over a five-year period (from fall 2005 to fall 2009). The data were analyzed using multiple linear regression.

The simulation used for this study was the Marketplace advanced strategic marketing simulation. In this simulation, student teams start up and run the marketing division of a large international electronics corporation. Each division is responsible for introducing a new line of microcomputers into markets in Asia, North America, Europe and South America. The students manage their division's operations for eight quarters, struggling with fundamental tasks such as setting up their organization and its operations, purchasing and analyzing marketing research data, analyzing and selecting target markets, designing, implementing and controlling their marketing program, managing finances, dealing with competition in a dynamic market, and interacting with corporate management. Repeatedly, students are required to analyze their division's situation, plan a marketing strategy to improve it, select the tactics to implement that strategy, execute the strategy and tactics out into the future, and deal with the consequences of their decisions (Cadotte and Bruce, 2003). Each team competes with the other teams in the class, and a significant portion of each student's course grade (25%) is based on their simulation performance.

The variables included in the study are simulation performance, time spent on-line (in minutes) by each team and team membership information. These were obtained from the marketplace software. The remaining variables, including GPA, international status of students and previous simulation experience were obtained from individual student records.

Simulation performance was measured using a balanced scorecard. The balanced scorecard produces a single number (the cumulative total business performance score) that can be used to rank order the competing teams at the end of the exercise. The total business performance measure is based upon a weighted combination of financial performance, marketing effectiveness, marketing performance, investments in the firm's future, and creation of wealth. The balanced scorecard is used extensively in industry, and its popularity reflects the fact that it encourages managing executives to consider several important performance criteria at the same time (Cadotte and Bruce, 2003). The performance measure was standardized (expressed as z-scores for all teams competing against one another in a given semester) to adjust for differences in the range of simulation scores from one simulation to the next.

The independent variables included the following:

1. **Previous simulation experience.** It is a dummy variable indicating whether or not each team had at least one member who had participated in the basic marketplace simulation as an undergraduate at the university where the study was conducted.
2. **International diversity.** It is a dummy variable indicating whether a team had two or more international students paired with at least 2 American students. The idea here was that a team with only one international student could avoid some of the communication difficulties of a diverse team through compensation by other team members, and that this would be more difficult in more diverse teams.
3. **Previous academic performance.** It is the average GPA for each team.
4. **Time commitment**. It is the amount of time spent online by each team over the course of the simulation.

The data for all independent variables except time commitment were collected at the individual level and aggregated as necessary to produce the team measures.

4. Analysis and results

Prior to the analysis, the data were tested to determine if the regression assumptions were met. Linearity was assessed via plots of the dependent variable against each non-binary independent variable and a plot of the predicted value of the dependent variable against the residuals. The plots revealed no obvious non-linear relationships. These plots were also used to test the equal variance assumption and revealed mild heteroscedasticity of the error terms. This was addressed by using White's standard errors (Hair, Black, Babin & Anderson, 2010) to calculate the *t*-values of the coefficients (dividing each beta coefficient by the square root of the appropriate diagonal element from the consistent covariance matrix). A Durbin-Watson statistic of 2.013 suggested no significant autocorrelation in these time series data. Examination of a correlation matrix and collinearity diagnostics generated by SPSS revealed that collinearity was not present in the data. The data were tested for outliers and influential observations using thresholds of $\text{DFBETAS} \geq 2\sqrt{n}$ and *R* student values ≥ 2 (Hair et al., 2010). Two observations were tagged as both non-typical and influential and were removed from the data prior to the analysis.

The ENTER method was used since all predictor variables were entered simultaneously. Tables 1, 2 and 3 depict the results of the analysis. Table 1 presents the model summary. The adjusted *R* square indicates that the model explained 13.1% of the variability in the standardized performance scores. Although this is quite small, the purpose of the model was not to predict simulation performance, but merely to determine if the predictor variables significantly influenced performance. The ANOVA results presented in Table 2 show that the regression produced an F-statistic of 2.739 and p-value of .041, indicating that the model was significant at the 95.9% level of confidence.

Table 1. Model summary[b]

Model	R	R square	Adjusted R square	Std. error of the estimate	Durbin-Watson
1	.455[a]	.207	.131	.85416022	2.013

Notes: a) predictors: (constant), average GPA, experienced yes/no, diversity, total time spent on decisions; b) dependent variable: Z-score, cumulative balanced scorecard total perfomance.

Table 2. ANOVA[b]

Model	Sum of squares	df	Mean square	F	Sig.
Regression	7.995	4	1.999	2.739	.041[a]
Residual	30.643	42	.730		
Total	38.637	46			

Notes: a) predictors: (constant), average GPA, experienced yes/no, diversity, total time spent on decisions; b) dependent variable: Z-score, cumulative balanced scorecard total perfomance.

Table 3 depicts the standardized beta coefficients, which provide a measure of the contribution of each variable to the model, and their respective significance tests. The previous simulation experience variable produced a t-statistic of .490 (p = .627), indicating that teams with an experienced member did not perform significantly better than those lacking an experienced member. For confirmation, an independent samples t-test was run with the standardized overall performance measure as the dependent variable and experience as the grouping variable. This test indicated no significant difference in the mean performance score between two groups (t = -.362; p = .724, equal variance not assumed). Thus, hypothesis 1 was not supported. The data provided no evidence that having at least one team member with previous simulation experience influences a team's overall performance score.

Table 3. Coefficients[a]

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. error	Beta		
Constant	-7.018	2.493		-2.815	.007
Experienced yes/no	.150	.306	.068	.490	.627
International diversity	.362	.261	.196	1.387	.173
Total time spent on decisions	4.252E-5	.000	.116	.799	.429
Average GPA	1.943	.754	.372	2.577	.014

Note: Dependent variable: Z-score, cumulative balanced scorecard total perfomance.

The international diversity variable produced t-statistic of 1.387 (p = .173). Thus, hypothesis 2, stating that having a team consisting of a mix of American and international students negatively influences a team's overall performance score, was not supported. In fact, since this was a one-tailed test, the result provided weak evidence (p = .086) of just the opposite; that internationally diverse teams actually performed slightly better than those consisting totally of American students, all else held equal. The beta coefficient for the international diversity variable indicates that having a team consisting of at least two international students increased the team's standardized overall performance score by .196 beyond the (insignificant) contribution of the experience variable, all else held equal. The mean standardized overall performance score for internationally diverse teams was .201 compared to -.115 for non-diverse teams.

Hypothesis 3 stated that average team GPA will exert a significant influence on a team's overall performance score. The t-statistic of 2.577 and corresponding p-value of .014 indicate that this hypothesis was supported. The results indicate at the 98.6% level of confidence that average team GPA does influence simulation performance in a positive direction. The beta coefficient indicates that each increase of one unit in a team's average GPA resulted in an increase of .372 in the standardized overall performance score, all else held equal.

Finally, the variable representing the amount of time spent on-line in the simulation produced a t-statistic of .799 ($p = .429$). Thus, hypothesis 4, stating that there is a relationship between the amount of time a team spends on-line with the simulation and a team's overall simulation performance was not supported.

Discussion

This paper sought to examine whether teams having a member with previous simulation experience perform better in a marketing simulation game than those consisting solely of novice players. The study also explored whether teams consisting solely of American students possess a performance advantage over internationally diverse teams. The research also revisited two previously examined potential contributors to simulation performance, average team GPA and amount of time spent on-line with the simulation. The findings suggest that having a team member with previous simulation experience does not significantly increase a team's chances of simulation success. The study also provided evidence that internationally diverse teams possess no performance disadvantage compared to non-diverse teams, and that such diversity may even enhance performance. Contrary to some previous studies, academic performance (average team GPA) was shown to strongly and positively contribute to simulation success and, consistent with previous research findings, amount of time spent on the simulation game was not found to be a significant contributor.

The results of this study are significant from a pedagogical standpoint. First, the results suggest that concerns about teams having a student with previous simulation experience possessing an advantage over those that do not are unfounded. Having a team member with previous simulation experience does not appear to increase a team's chances of success. However, we do not mean to imply from this that experience is not important. Previous research has shown that teams that perform well on a simulation are generally able to repeat their performance (Wellington and Faria, 1996). More likely is that other factors moderate the degree to which having an experienced member contributes to simulation performance. For example, the experienced member's influence on team decisions might be a moderating factor. Wolfe and Box (1986) concluded that strong team leadership positively influences simulation performance. Therefore, when an experienced member is a driving force for the team, that individual's suggestions may be more likely to be listened to and adopted by the team. Likewise, the experienced member's prior simulation success should be considered. If the experienced student was a member of a team that performed poorly in the first simulation, that student may have had gained little in the way of knowledge or skills that could benefit their team in the second, particularly if the first course provided no formal avenue for students to learn from their mistakes. Finally, team dynamics could play a role. Many factors can lead to dysfunctional decision-making in teams (Cadotte and Bruce, 2003), and some of these (e.g., lack of cohesiveness) may be detrimental to simulation success (Faria, 2001). Thus, the potential contributions of an experienced member may be undermined by other problems encountered by the team over the course of the simulation game. These may represent areas where additional research is warranted.

Our findings also suggest that students need not be overly concerned if they are placed on a team with students from other countries, even though they may find those students difficult to communicate with and/or may have different ideas regarding things like showing up for meetings on time. There is no doubt that real communication difficulties and problems resulting from cultural differences are often present in these situations. This is supported by research (e.g., Schoenecker et al., 1997; Watson, Kumar and Michaelsen, 1993) and we have observed it first-hand in our own classes. However, our research shows that teams usually find ways to overcome these difficulties and perform at a level comparable to competing teams.

Some students on internationally diverse teams agree that they are ultimately able to perform as well as non-diverse groups, but feel they must work harder to achieve comparable results, and that this also represents a form of disadvantage. Thus, it is not only actual performance disparities but student perceptions of their experience that instructors must be concerned with. Some of our suggestions for improving students' perceptions of their experience on internationally diverse teams include early training to help teams become aware of some of the problems they are likely to encounter and strategies for dealing with them, careful team formation practices, use of translation by international students with stronger language skills, and encouraging written communications among team members when verbal communication is difficult or impossible.

The preceding also has implications for the marketing profession. For example, in team selling situations it is common to place an experienced salesperson with a group of less experienced salespeople on the assumption that the presence of the experienced person will lift the overall performance of the team. The results of the present study suggest that such a strategy may not produce significant improvement in results for the group or team. Likewise the idea of a "diversity advantage" has been widely proclaimed in recent years. Accordingly, a significant effort has been made to diversify sales forces and advertising creative teams on the basis that they can better relate to the customer if they are more diverse. The data in this study offers mild support for diversity, at least from an international perspective.

Regarding previous academic performance as a predictor of simulation success, our results place this study firmly into the category of those that support the relationship. As noted previously, there are quite a few studies that have not supported a link between various measures of academic performance and simulation performance, but in our particular situation there is little doubt that teams consisting of better students consistently outperform teams consisting of poorer students.

We believe part of the explanation for the differing research findings regarding the relationship between academic and simulation performance has to do with team dynamics. While some studies (e.g., Anderson and Lawton, 1992; Washbush and Gosenpud, 1993) have used exam scores as the academic performance variable, others (e.g., Glommes, 2004; Schoenecker et al., 1997) based their definition mainly on GPA. Conflicting results have been obtained using both specifications. However, previous research has also shown that other team qualities, such as consistency in decision-making (Schoenecker et al., 1997), involvement in the exercise (Wolfe and Luethge, 2003) and competitiveness (Wellington et al., 2009) contribute to simulation performance, and these qualities may or may not coexist with academic ability on a given team. Thus, teams that are not particularly strong academically may possess other qualities that enable them to perform at a high level. Nevertheless, it seems that a preponderance of evidence has begun to tip the balance in favor of academic performance as an independent contributor to simulation success, and this has important implications for team formation in both professional and academic settings. Our findings indicate that instructors, as well as business managers, should consider academic performance measures in team formation in order to make sure the teams are fairly "balanced".

Finally, consistent with previous research findings, our results suggest that many teams spend too much time immersed in the minutia of the simulation game with little to show for their effort. Written comments our students provide as part of their course evaluation suggests that the teams who devote much time and still do not perform well are among the most dissatisfied with the simulation experience. This along with previous research findings regarding amount of time spent on decisions in simulation games (e.g., Armenakis, Field and Holley, 1974) indicates that part of the instruction process should involve alerting students to the potential pitfalls of "over-thinking" their decisions, and encouraging them to set time limits (Cadotte and Bruce, 2003) or employ other techniques that will help them work more efficiently. This may provide benefits to both the students and the instructors.

This study is a subject to some limitations. First, the data represented students at a single university. Also, although our sample size was not particularly small compared to other studies in this area, a larger sample size may have yielded more robust findings, particularly regarding the international diversity variable. Our data leave in question whether international diversity actually enhanced simulation performance or simply had no affect. Finally, honest peer evaluations as a measure of the degree to which each team member was perceived as contributing to the team's effort almost certainly would have shed additional light on the issue of previous simulation experience and its effects on simulation performance. Although peer evaluations are a component of both the graduate and undergraduate simulation-based courses at our university, they are non-specific and represent a significant portion of each student's grade and are therefore subject to bargaining and other biases that rendered them unusable in this context.

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