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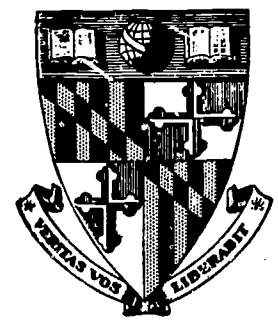
ABSTRACT

This investigation attempted to evaluate the effectiveness of the simulation game, Ghetto, in changing attitudes, and to determine whether effectiveness is associated with the personal characteristics of the players. There are two purposes: to teach factual information about the conditions faced by the urban poor in the inner city and to produce a more favorable attitude towards poverty. The entire homogeneous senior class in an all-boy catholic high school in Baltimore participated in the role playing. This simple one-group pretest and posttest questionnaire study was conducted as a part of a unit on poverty in eight social studies classes for four 55 minute periods. No other activities were allowed between pre and post-tests. A pretest self report item measured personal and vicarious experience with poverty. The greatest practical and statistically significant finding was that student attitudes were more favorable after the game than before. However, no increase in factual information and a small decline in interest were measured. Attitude change was positively correlated with vicarious experience with poverty, supporting Jerry L. Fletcher (1968). (There were no measures of long-term attitude change or teacher attitudes). (SBE)



THE JOHNS HOPKINS UNIVERSITY

REPORT No. 63

THE CENTER FOR THE STUDY OF SOCIAL ORGANIZATION OF SCHOOLS

SIMULATION GAMES AND ATTITUDE CHANGE: ATTITUDES TOWARD THE POOR

BY

SAMUEL A. LIVINGSTON

APRIL, 1970

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(Questionnaire Study 1)

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SUMMARY

The effect of a simulation game on players' attitudes toward the poor was investigated by means of a pretest-posttest questionnaire study. The respondents were the senior class of an all-boys Catholic high school, who played the game for four periods in their social studies classes. Their attitudes were significantly more favorable to the poor after they played the game than before. The students' attitude change varied significantly from teacher to teacher, but was not significantly correlated with any of several other variables investigated. The game produced no change in factual information and a small but significant decline in interest in the subject matter.

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INTRODUCTION

The study reported here was an attempt to evaluate the effectiveness of one particular simulation game in changing attitudes and to determine whether the effectiveness of the game is associated with certain characteristics of the players. The game used in this study was Ghetto; in it the player takes the role of a poor person living in an inner-city slum. The game has two purposes: to teach factual information about the conditions that poor people in cities must face, and, by means of this information, to produce in the player a more favorable attitude toward the urban poor.[1] These objectives suggest the following two questions for investigation:

1. Does the game increase players' factual information[2] about urban poverty?

2. Does the game produce more favorable attitudes toward the urban poor?

The statement of objectives also implies a causal relationship, with information the means to attitude change, and thus suggests a third question:

3. Are differences in factual information about poverty associated with differences in attitude toward the poor?

One way in which the game might achieve its objectives would be to give the players a rational understanding of the relationships that operate in the daily lives of poor people. This hypothesized mechanism suggests a fourth question:

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[1]These are the objectives of the game as expressed by its designer, Dove Toll, in a personal communication to the author.

[2]"Factual information" here refers specifically to those facts which could be learned from the game.

4. Do players who best understand the game show the greatest increase in information and positive change in attitude?

Another way in which the game might achieve its objectives would be to provide a vicarious experience with poverty. This hypothesis suggests two more questions:

5. Are differences in factual information or in attitude (before the game) associated with previous experience with poverty (either personal or vicarious)?

6. Do players who report having had previous experience with poverty show less change in information or attitude as a result of the game than players who have not?

The fact that a player's experience in the game may depend heavily on the specific role he takes leads to another question:

7. Do changes in factual information or in attitude differ systematically among players who play different roles in the game?

Because the teacher may influence the students' reaction to a game, another question seems appropriate:

8. Do changes in factual information or in the attitude differ systematically among the students of different teachers?

Finally, several authors have asserted that simulation games stimulate students' interest in the subject matter of the games. This claim suggests a final question:

9. Does the game increase players' desire to learn about the problems of poverty?

Previous studies with simulation games suggest that a game can change players' attitudes toward its subject matter. Cherryholmes (1965) found that the Inter-Nation Simulation produced consistent and significant changes in high school students' attitudes toward foreign policy. The changes were toward a "realist" position and away from a "moralist-idealist" position. Boocock (1966) found that high-school-age boys who

played the role of a potential high school dropout in the Life-Career game tended to be more sympathetic to that role after the game than before, while the opposite was true for girls. In the same study she found that the Democracy game did not produce consistent changes in the players' attitudes toward congressmen. However, Cohen (1969) found that the Democracy game produced attitudes of political cynicism among junior high school students.[1]

METHOD

The respondents for this study were the entire senior class of an all-boys Catholic high school in Baltimore. The study was conducted as part of a unit on poverty in the school's regular Modern Problems course and was administered entirely by the regular classroom teachers. There were eight Modern Problems classes; in all eight classes the students played the game for four 55-minute periods.

The form of the study was a simple one-group pretest-posttest design. Because the game was to be part of a unit containing other activities and materials on the subject of poverty, no long-range assessment of the effect of the game was possible. In order to avoid confounding the effect of the game with that of other activities in the unit, the teachers were asked to use the game to introduce the unit and not to

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[1]The students became less likely to agree that congressmen should vote according to their own beliefs, rather than their constituents' preferences, but more likely to agree that sending letters to congressmen is a waste of time. Both changes were significant at the .001 level (Cohen, 1969, p. 10). Differences between Cohen's and Boocock's results with the Democracy game may be associated with differences in the subjects and setting. Boocock's subjects were delegates to a national convention of 4-H clubs; Cohen's subjects were enrolled in a summer school program for unmotivated junior high school students.

conduct any activities other than the game between the pretest and posttest. These instructions were followed in five of the eight classes. In two other classes, the only additional activity was a class discussion of the game. In the eighth class, the students viewed the film "Hunger in America" before answering the posttest questionnaire. These differences in treatment required that the posttest data for the classes which discussed the game and the class which viewed the film be analyzed separately.

Eleven items appeared on both the pretest and the posttest questionnaires.[1] Each item consisted of a statement for which the student was to indicate agreement or disagreement on a five-point scale: (strongly agree, agree, undecided, disagree, strongly disagree). Six of these items were intended to measure attitudes toward the poor; four were intended to measure factual knowledge about poverty that could be acquired from the game; one was intended to measure interest in learning about poverty. The attitude items and fact items were mixed in random sequence on the pretest and in a different random sequence on the posttest.

The six attitude items make up three pairs, each pair dealing with a specific problem associated with poverty: unemployment, welfare, and crime. Within each pair, one item expresses an attitude favorable to the urban poor; the other, an unfavorable attitude. The attitude items were scored one to five, with a high score representing an attitude favorable to the poor. Thus, if the statement in an item expressed an attitude favorable to the poor, a response of "strongly agree" was assigned five points, and a response of "strongly disagree" was assigned

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[1] These questionnaires were developed with the help of the designer of the Ghetto game, Dove Toll.

one point. If the statement expressed an attitude unfavorable to the poor, the scoring was reversed.

The interest item was also scored one to five, with five points representing the greatest interest in learning about the problems of the poor.

The four fact items each contained statements that were either verifiably true or verifiably false. These items were constructed to test specific facts that the game designer had intended the game to teach. They were scored by assigning five points for a correct response, three points for "undecided," and one point for an incorrect response.

Four items appeared on the posttest only. These were scored in the same way as the fact items and were intended to measure understanding of the game. The statement in each item is either correct or incorrect; a player who disagrees with a correct statement or agrees with an incorrect statement has failed to understand some aspect of the game. One of these items was not used in the analysis because it correlated negatively with the other three items and because the information it tested seemed to be of a different kind--specific detail, rather than general structure.

Information on the students' personal and vicarious experiences with poverty was obtained by means of a self-report item on the pretest. "Vicarious experience" included reading books or magazine articles or seeing movies or television shows about the problems of poverty.

RESULTS

Interpretation of the results of a questionnaire study of this type requires a knowledge of the internal consistency of the questionnaire scales, that is, the extent to which the respondents tend to respond in the same way to all the items on the scale. Table 1 presents measures

Table 1

Internal consistency of questionnaire scales

	Coefficient alpha[1]	Average item-intercorrelation
Pretest (n = 202)		
Attitudes	.48	.13
Factual information	.24	.08
Posttest (n = 136)		
Attitudes	.45	.12
Factual information	<.00	<.00
Game understanding	.23	.09

[1]Coefficient alpha is a reliability coefficient computed by a formula which is a generalization of Kuder-Richardson formula 20 to items which are not dichotomous.

of internal consistency for the scales used to measure attitudes, factual information, and understanding of the game. Pretest measures are computed for the entire sample (n = 202); posttest measures are computed for a restricted sample which did not include the classes that discussed the game or viewed the film before answering the posttest questionnaire (n = 136). The low internal consistency of the fact and game scales indicates that little confidence can be placed in correlations of these measures with other variables.

Nine questions for investigation in this study were listed earlier in this report. Because of the complete lack of consistency in the post-test fact scale, questions involving correlations between it and other variables cannot be answered from the data. The other questions can be at least tentatively answered.

> Does the game increase the players' factual information about poverty?

Probably not. The mean change in factual information was extremely small--less than .005 of the standard deviation of the pretest scores--and was not an increase, but a decrease.

> Does the game produce more favorable attitudes toward the poor?

Yes. The mean change in attitudes was equal to .34 of the standard deviation of the pretest attitude scores. Thus, if the scores were distributed normally, the 50th percentile on the posttest would fall at the same score as the 63rd percentile on the pretest. This effect was significant beyond the .001 level with a two-tailed test (t = 4.63).

> Are differences in factual information about poverty associated with differences in attitude toward the poor?

Before the game, yes. These scores correlate .33, a figure which

is remarkably high, since the theoretical maximum correlation (without allowing for sampling variability) between two tests with as little internal consistency as these measures is .34.

> Do players who best understand the game show the greatest positive change in attitude?

No. The part correlation between game understanding and posttest attitude score, with posttest attitude controlled for pretest attitude,[1] is -.03.

> Are differences in factual information or in attitude (before the game) associated with previous experience with poverty (either personal or vicarious)?

Possibly. Although none of the four correlations suggested by the above question is significant, the correlation of .19 between vicarious experience and factual information approaches significance at the .05 level and would be significant if corrected for attenuation. The single-item self-report measure of personal experience with poverty which was used on the questionnaire is probably not a valid indicator, since "personal experience with poverty" may well mean different things to different people.

> Do players who report having had previous experience with poverty show less change in attitude as a result of the game than players who have not?

No, they show somewhat more change. The part correlation between vicarious experience with poverty and posttest attitude score, with posttest attitude controlled for pretest attitude, is .17, indicating a small positive relationship.

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[1]The part correlation is used because correlations involving raw change scores (posttest minus pretest) can be misleading. For an explanation of this phenomenon, see Lord (1958, pp. 444-445).

Do changes in attitude differ systematically among players who play different roles in the game?

No. An analysis of covariance of posttest attitude scores controlled for pretest attitude showed no significant role effect ($F = 1.5$; $df = 2$ and 198). For this analysis the roles were classified into four categories: man with children, single man, woman with children, and single woman.

Do changes in attitude differ systematically among the students of different teachers?

Yes. An analysis of covariance showed a small but significant effect, with the teacher accounting for about four percent of the total variance ($F = 3.9$, $df = 2$ and 198, $p < .05$).

Does the game increase players' desire to learn more about the problems of poverty?

No. It seems to have a slight effect in the opposite direction. The decrease was equal to only about .13 of the standard deviation of the pretest scores (roughly one-third as large as the change in attitude) but was significant at the .05 level with a two-tailed test ($t = 2.32$).

Table 2 presents a summary of the pretest and posttest measures of factual information, attitude, and interest. Table 3 presents the mean pretest and posttest responses to each fact and attitude item. The data for Tables 2 and 3 is based on the restricted sample.

DISCUSSION

Of the several findings of this study, the one that had the greatest practical significance (as well as the highest statistical significance level) was that the students' attitudes toward the poor (as measured by the questionnaire) were more favorable after they played the game than

Table 2

Summary of fact, attitude, and interest measures

(n = 136)

	Pretest		Posttest		Change		t	p
	Mean	SD	Mean	SD	Mean	SD		
Factual information	14.67	3.23	14.65	3.03	-0.015	3.36	< 1	N.S.
Attitude	18.79	3.47	19.91	3.09	+1.12	2.81	4.63	< .001
Interest	3.98	0.89	3.83	0.82	-0.15	0.74	2.32	< .05

Table 3

Mean pretest and posttest responses[1] to each fact and attitude item (n = 136).

Fact Items	Mean	SD	Mean	SD	Change as proportion of pretest SD
Welfare pays as much as most full-time unskilled jobs. (-)	3.70	1.47	3.16	1.76	-.37
There are enough unskilled jobs for all the people who want them. (-)	2.69	1.75	3.58	1.63	+.51
Students who graduate from high schools in ghetto neighborhoods are less likely to succeed in college than other high school graduates. (+)	3.65	1.63	3.58	1.70	-.04
Neighborhood conditions--housing, schools, recreation facilities, and safety--are most important to people who have children. (+)	4.63	1.07	4.33	1.38	-.28
Attitude Items					
Being on welfare is nothing to be ashamed of. (+)	3.18	1.18	3.40	1.03	+.19
Many mothers on welfare have children just to get more money from the government. (-)	3.35	0.98	3.24	1.09	-.11
Practically nobody who is unemployed and able to work will pass up the chance to get a job. (+)	2.46	1.14	2.92	1.22	+.40
If a family is poor it usually means that they are lazy. (-)	4.29	0.87	4.21	0.73	-.09
Sometimes poor people engage in illegal activities because they have no choice. (+)	3.40	1.11	3.73	1.03	+.30
Poverty is no excuse for breaking the law. (-)	2.11	1.15	2.40	1.04	+.25

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[1]The plus or minus sign after each item tag indicates the direction of scoring for that item. Fact items were scored 1, 1, 3, 5, 5; attitude items were scored 1, 2, 3, 4, 5.

before. This result should not be surprising, since it reflects the effect the game is intended to have. However, the game (according to its designer) is supposed to change attitudes by increasing information. The questionnaire, which was developed with the help of the game designer, showed no increase in the students' factual information. It is this combination of effects, or rather of effect and lack of effect, which needs to be explained.

In an unpublished paper, Fletcher (1968) has written:

> For unexpected behavior to appear, the participants have to be so caught up in their roles that the normal controls over their behavior disappear. Such intense involvement is unlikely to permit analytic moves based on the contingencies of a particular setting. Involvement and analysis cannot be learning objectives of the same game.

The results of this study support the hypothesis implicit in Fletcher's statement: that simulation games change attitudes by providing an intensely involving vicarious experience. This experience is probably of a different kind from that provided by more passive activities such as reading or watching movies or television. In fact, a simulation game may complement these other activities in producing attitude change; in this study, favorable attitude change was positively correlated with vicarious experience with poverty.

The decline in interest in learning more about the problems of poverty can easily be explained by the tendency of high school students to become tired of almost any specific subject of study after a week's concentration on it. Although this explanation comes after the fact, it is offered quite seriously and has important implications. It suggests that if a simulation game is played day after day in the same class, the students will become bored with it as they would with any

other activity. Perhaps the enthusiasm that many other authors have observed when games are introduced into schools is mainly the result of the fact that games are a new medium of instruction. If this interpretation is correct, then games might become less effective the more they are used.

There is another plausible explanation for the decline in interest, one with quite different implications. This explanation is that the students were not so much tired of the game as they were frustrated by the problems of poverty as they experienced them through the game. Having found learning about the problems of poverty to be a frustrating experience, the students were unlikely to ask for more of it. In the words of one of the teachers, "The more you learn about ghetto problems, the more you realize that there aren't any easy solutions." If this explanation is correct, then in general we can expect that a simulation game which produces a great deal of frustration will not increase students' interest in the subject matter of the game.

The small but statistically significant effect of the teacher on attitude change is probably less a result of the teachers' attitudes toward the subject than of their attitudes toward simulation games as a teaching technique. Unfortunately, no questionnaire was administered to the teachers before the study to record their attitudes on either of these points; therefore this explanation must remain (for the present) an untested hypothesis.

Another shortcoming of this study is the lack of a measure of long-term attitude change. To expect four hours of game-playing to produce lasting changes in attitudes may be unrealistic; yet if such a result were found, it would be strong evidence for the impact of simulation games.

There are other important questions left unanswered by this study. One of these is a methodological question: did the pretest act as a sensitizer, or would the same effects have been found without it? Another concerns the characteristics of our sample, which was homogeneous (or nearly so) with regard to age (16-17), sex (male), religion (Catholic), and race (white): to what extent will conclusions from this study apply to other populations? A third question concerns the effect of the groups in which the students played the game: what characteristics of the group modify the effect of the game on the attitudes of individual players? Answers to these questions can be found through further studies.

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