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PLAYING GAMES BEFORE AN AUDIENCE: SOCIAL FACILITATION OR CHOKING

CHARLES E. KIMBLE AND JEFFERY S. REZABEK
University of Dayton

In this study we examined video game performance under audience scrutiny to see if social facilitation or choking effects would be obtained. Social facilitation theory suggests that good players would do better and poor players would do worse under audience pressure and that all players would do better on a simple or maximizing game and worse on a complex or optimizing game under audience pressure. Choking research indicates that audience pressure would produce poorer performance on both games. College student players played either a simple game, Pinball, or a complex game, Tetris, unobserved and then as the experimenter watched. Results showed that good players performed worse and bad players played better on the simple game under audience pressure. All participants played worse under audience pressure on the complex game. The choking approach accounts for these results better than social facilitation theory does.

Keywords: playing games, audience, social facilitation theory, video games, performance, Pinball, Tetris, choking effects.

Baumeister (1984) found that good video game players performed poorly (choked) when they were watched by an audience of one as they played. Tice, Buder, and Baumeister (1985) found that this tendency to perform more poorly when watched than when not watched was greatest for teenagers, somewhat less for young adults, and did not occur at all for preteeners – they did better when watched. Such choking is presumed to occur because audience pressure increases state self-consciousness or self-focus, which disrupts skillful performance (Baumeister, 1984; Mullen & Baumeister, 1987). Social facilitation theory (Zajonc, 1965, 1980) indicates that good video game players should not choke under audience pressure. Zajonc's theory states that the presence of other people should increase the performer's arousal and that arousal should make the individual likely to emit the dominant or pre-eminent response in his or

Appreciation is due to anonymous reviewers.
Please address correspondence and reprint requests to: Charles E. Kimble, Department of Psychology, University of Dayton, Dayton, OH 45469-1430, USA.

her response hierarchy for the task. If the task has been mastered, the strongest response is likely to be the correct one. Thus, the presence of an audience should improve performance for good players. On the other hand, the presence of an audience should hinder performance for poor players. One study produced supportive results in the game room in that good pool players became more accurate when they had an audience and bad players did worse when they were observed (Michaels, Blommel, Brocato, Linkous, & Rowe, 1982). We expected that better players would perform better under audience pressure than poorer players, according to Zajonc's social facilitation theory.

A task factor that is important in Zajonc's theory is whether the task is simple or complex. Arousal caused by the presence of an audience and the consequent dominant responses should make performance better on simple tasks and worse on complex tasks. In the present study, we recorded performances on a relatively simple game, Pinball, and a relatively complex game, Tetris. In Pinball, there is a premium on fast, reflexive responses. Players are constantly responding with as quick reaction times as they can. In Tetris, while speed of response is certainly important, players must rotate figures and make comparisons with the figures already on the screen in order to place the figures properly and score points. The authors of this paper believe that maximizing versus optimizing tasks (Steiner, 1972) is probably a better distinction to make than simple versus complex tasks in the theory. Maximizing tasks demand maximum speed and effort, while optimizing tasks require accuracy and precision. Pinball is mainly a maximizing task, and Tetris is mainly an optimizing task. The choking approach (Baumeister, 1984; Mullen & Baumeister, 1987) also indicates that choking under audience pressure is more likely to occur on tasks of skill, especially those which require both speed and accuracy. We expected better performances under audience pressure on Pinball than on Tetris from this approach.

METHOD

Participants

Forty-six people (40 males, 6 females) participated in this experiment. Participants (ages = 18-23 years) were observed as they played two games of Tetris or Pinball in a games room at a university. Twenty-three played Pinball and 23 played Tetris; only one female played Pinball.

Procedure

The second author, who collected the data, worked in the university games room. He wore his employee's shirt while observing so that he would be unobtrusive while observing the first score and so that he had a cover story for observing participants play the second game. He excluded friends and acquaintances from

the pool of potential participants. As prospective participants finished their first game, he approached them and asked them if they would participate in a study for the games room staff. If they agreed, the experimenter copied the game 1 score. Then he said, "We're doing a study in the games room to see how much time is spent on video games per 25 cents. All that I am going to do is time you on your next quarter." The experimenter then stood within the participant's peripheral vision as he or she played the game. After the game, the experimenter recorded the game 2 score, asked for other information, and explained that the study was done to see if their second score would be affected by someone watching them relative to their first score. The experimenter thanked the participant and excused himself.

RESULTS

We analyzed the Pinball and Tetris data separately using a split plot analysis of variance with audience as the within-subjects variable and ability as the between-subjects variable. The ability factor was derived by doing a median split on the game 1 scores with the odd score assigned to the low ability group because it was below the mean in both cases. Tables 1 and 2 show the means for each cell for each type of game.

TABLE 1
PINBALL SCORES AS A FUNCTION OF AUDIENCE AND ABILITY

	No Audience (1st)	Audience (2nd)
Low ability	2,077,120.8	2,666,900.0
High ability	7,725,304.5	6,537,368.2

TABLE 2
TETRIS SCORES AS A FUNCTION OF AUDIENCE AND ABILITY

	No Audience (1st)	Audience (2nd)
Low ability	13,836.33	10,931.67
High ability	44,862.00	39,966.46

The Pinball analysis showed that there was no significant increase or decrease from no audience to audience conditions overall; no audience M = 4,778,426.1; audience M = 4,517,993.5; $F(1, 21) = .60$, *ns*. This result is inconsistent with the studies of Baumeister and associates' studies in which scores declined when

the observer was present, but the game is simpler, more maximizing than their games were. It is also inconsistent with Zajonc's position that audience should improve performance on simple tasks.

The Pinball analysis also showed that an ability by audience interaction occurred, $F(1, 21) = 5.26$, $p < .05$. Examination of the means reveals that high ability players' performance declined when the observer was present and low ability players' performance improved. This pattern of results is the opposite of what social facilitation theory implies.

The Tetris analysis showed that there was a significant decrease in performance from the no audience to audience conditions; no audience $M = 28{,}674.70$; audience $M = 24{,}817.87$; $F(1, 21) = 8.16$, $p < .01$. This result is consistent with the Baumeister (1984) findings.

The ability by audience interaction on the Tetris game was not significant, $F(1, 21) = .53$, *ns*. This pattern of results indicates that the prior ability of the performer did not affect performance when an audience was present. Social facilitation theory implies that good players should perform better and bad players should do worse when an audience is present, as Michaels et al. (1982) found.

DISCUSSION

This study produced results that mainly did not support the social facilitation theory of Zajonc (1965, 1980). In fact, on the simple or maximizing game, we found results that directly contradict the theory – good players performed worse and bad players performed better before an audience.

On the other hand, we found some results which are consistent with Baumeister's (1984) ideas about choking under audience scrutiny. On the complex or optimizing game, we found that players performed worse when they were being observed, just as participants had in Baumeister's (1984) arcade game study. Admittedly, these results are also consistent with Zajonc's ideas about how the presence of an audience should affect performance on a complex game.

Also, our finding that good players performed worse and bad players performed better before an audience is consistent with both the Baumeister (1984) and the Tice et al. (1985) results. Since Baumeister (1984) only observed good players, the fact that they performed worse before an audience is consistent with half of our results. Our good players reacted to the presence of an audience as Tice's et al. teenage players did and our bad players reacted as their preteen players did. Tice et al. (1985) suggest that their teenage players had much invested in their performances

and were self-conscious before the observer, while the preteen players did not have great ego-investment in their performances and were not self-conscious. We believe our good players probably also had more invested in their performances and were more self-conscious about performing than our bad players. Other investigators have found that skillful performers are more likely to choke before an audience than beginning or unskilled performers in gymnastics (Paulus & Cornelius, 1974; Paulus, Shannon, Wilson, & Boone, 1972) and squash (Forgas, Brennan, Howe, Kane, & Sweet, 1980). Skillful performers are simply likely to be more self-conscious and self evaluative before an audience than less skilled performers are. It should be noted, however, that in our study this pattern of unskilled players doing better only occurred on the simpler game of Pinball, while everybody choked under audience pressure on the more demanding game of Tetris.

Baumeister's approach, which was supported in these results, emphasizes redirection or misdirection of attention and excessive evaluation in explaining why people choke under various types of pressure. Baumeister (1984) showed that directing performers' attention toward a subcomponent of the overall activity, offering performers money for good performance, putting male performers in a competitive situation in which they were being outperformed by a female, and having performers perform before an attentive observer (as in the present study) produced poorer performance. What is the common element or elements of these situations? All of them involve situations in which the goodness of performance is being evaluated by others and the performer, and the performer is being distracted from the task. Recently, Mullen and Baumeister (1987) have emphasized that all of these conditions serve to increase self-attention, which impairs performance on skillful tasks. We believe this is true because self-attention diverts attention from the task and makes salient the self-evaluation implications of the performance. Previous research (Baumeister, 1984; Tice et al., 1985) suggests that both the distraction element and the self-evaluation element work in concert to produce the choking effect.

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