Short Report

See the Ball, Hit the Ball

Apparent Ball Size Is Correlated With Batting Average

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Baseball players frequently say that the ball appears bigger when they are hitting well. In describing a mammoth 565-ft home run, Mickey Mantle said, "I never really could explain it. I just saw the ball as big as a grapefruit" (Early, n.d.). George Scott of the Boston Red Sox said, "When you're hitting the ball [well], it comes at you looking like a grapefruit. When you're not, it looks like a blackeyed pea" (Baseball Almanac, n.d.). During a slump, Joe "Ducky" Medwick of the St. Louis Cardinals said he felt like he was "swinging at aspirins" (Bradley, 2003). Similar comments have been made by such Hall of Famers as Ted Williams (Bicknell, 2000), "Wee" Willie Keeler (Bradley, 2003), George Brett (Langill, n.d.), and more.

This phenomenon is not limited to baseball. When playing well, tennis players report that the ball looks huge, golfers say that the cup looks bigger, and basketball players say that the hoop looks enormous. All of these people report perceptions that are modulated by performance efficacy. Our experiment confirms that this phenomenon is a psychological reality.

METHOD

We recruited 47 players (37 male, 10 female) from men's and coed intramural and city softball leagues. Ages ranged from 21 through 56. All participants gave informed consent.

We set up a table near the local softball fields in Charlottesville, Virginia, and advertised free sports drinks. Players who had just finished competing in one or two games were offered a drink and asked if they would like to participate in a 1-min psychology experiment. First, participants were shown a 32-cm × 42-cm poster displaying eight black circles, ranging (unsystematically) from 9 cm to 11.8 cm in diameter, and were asked to select the circle that they thought best corresponded to the size of a softball. The actual size of a softball is 10 cm.[1] After selecting a circle, participants reported how many times they had been at bat, their number of hits and walks, and how many times they had gotten on base because of an error. Batting average was computed as the number of hits divided by the number of times at bat that did not result in a walk or an error. We also got information on participants' age and sex and whether their team won or lost.

RESULTS

The purpose of the experiment was to investigate whether there is a relationship between recent success at hitting and the perceived size of the ball. As is apparent in Figure 1, batters who hit well perceived the ball to be bigger than did participants with less success at bat. A Spearman rank-order correlation with circle size (1 being the smallest, 8 being the biggest) as the dependent measure confirmed that there was a relation between batting average and perceived size of the ball ($r = .29$, $p < .05$). Age was not significantly correlated with perceived size ($p > .64$). An analysis of variance with perceived size as the dependent variable revealed a significant effect of sex, $F(1, 45) = 10.09$, $p_{rep} = .97$, $d = 0.18$.[2] Males ($M = 5.38$, $SD = 2.07$) perceived the ball to be bigger than did females ($M = 3.00$, $SD = 2.21$), although there was no difference in batting average between the sexes (Ms = .65 and .64, respectively). Whether the participant's team won or lost the game did not have a significant effect on perceived size of the ball, $F(1, 45) = 0.14$.

DISCUSSION

Many athletes report perceptions that are influenced by their current level of performance. For example, baseball players say that the ball looks bigger when they are hitting well and smaller when they are in a slump. Our results confirm this phenomenon: Players who had just had success at hitting recalled the ball to be bigger than players whose recent batting average was lower.

This finding is consistent with previous research showing that other perceived dimensions of the environment are affected by the perceiver's behavioral potential. Targets beyond hand's reach look closer to people when they hold a tool and can reach to the target with it than when they are not holding the tool (Witt,

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[1]The mean size of the stimuli was larger than the size of an actual softball because pilot data revealed that pictures of objects look smaller than the objects themselves.

[2]For an explanation of the p_{rep} statistic, see Killeen (2005).

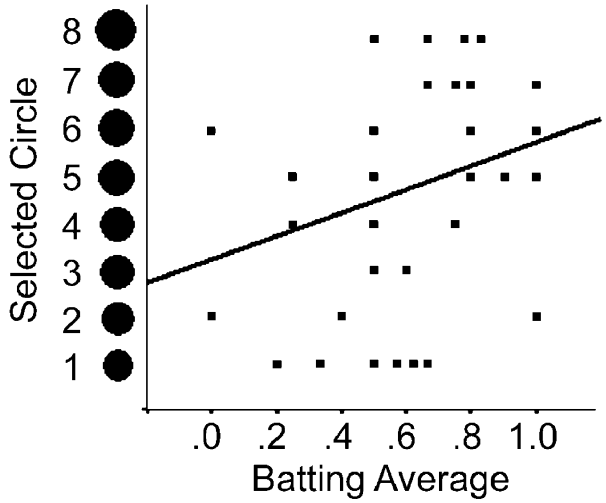

Fig. 1. Apparent ball size as a function of batting average. Each square represents 1 or more participants' data. The circles on the *y*-axis are drawn to preserve relative size. The solid line is the correlation between batting average during one or two softball games and the circle selected as best matching the size of the softball.

Proffitt, & Epstein, in press). Wesp, Cichello, Gracia, and Davis (2004) demonstrated that dart-throwing ability affects perceived size of the target. Participants who hit the target with fewer attempts selected larger circles as matching the size of the target than participants who were not as successful.

Similar research has demonstrated a relationship between the effort required to perform an action and the perception of spatial layout. Targets looked farther away when participants wore a heavy backpack (Proffitt, Stefanucci, Banton, & Epstein, 2003) or threw a heavy ball to the targets' location (Witt, Proffitt, & Epstein, 2004) than when the participants exerted less effort. Hills looked steeper to participants who were fatigued after a long run than to participants who had not run (Proffitt, Bhalla, Gossweiler, & Midgett, 1995) and also looked steeper to participants who wore heavy backpacks than to participants who were not wearing backpacks (Bhalla & Proffitt, 1999). Participants who were out of shape or elderly and of declining health perceived hills to be steeper as well (Bhalla & Proffitt, 1999).

Unlike in the previously reported experiments, participants in our experiment did not actually look at the target when they made their size estimate. Therefore, it remains to be resolved whether the effect we report is due to a change in perception or to a change in memory.[3] If the effect is perceptual, the direction of causality is still undetermined. Did participants who saw the ball as being bigger therefore hit better, or did participants who hit better therefore see the ball as being bigger? Perhaps the effect is reciprocal, with performance and perception affecting each other.

Pete Rose once described his philosophy on hitting as "see the ball, hit the ball" (Baseball Quotes, n.d.). Seeing the ball well is thought to improve hitting performance. Our study shows that hitting performance, in turn, influences how big the ball appears to be. Whether apparent ball size has a reciprocal influence on hitting performance remains an intriguing question.

Acknowledgments—This research was supported by National Science Foundation Information Technology Research for National Priorities/Carnegie Mellon Grant 0121629 and by Office of Naval Research Grant N000140110060 to the second author.

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(RECEIVED 5/31/05; REVISION ACCEPTED 6/10/05; FINAL MATERIALS RECEIVED 6/16/05)

[3]The study by Wesp et al. (2004) demonstrated that efficacy can affect perception because the target was present when participants estimated its size.