Attention Please!

I've got a puzzle for you.

You are choosing between two beer brands, Radegast and Urquell. Your decision process consists of moves on a chessboard. You choose Radegast if you reach the board's Right edge and Urquell if you reach the Upper edge. You keep on moving until you make choice. The board is infinite to the left and downwards; you stay sober if you get lost southwest.

You start from an arbitrary board square. In each period, you look at one of the two beers. You move one step horizontally whenever you look at Radegast and one step vertically when you look at Urquell. You follow an arbitrary *attention strategy* that specifies for each square the beer you look at.

Radegast isn't great and thus you move left–away from its choice–with a probability p larger than half and right with probability 1-p whenever you look at it. Urquell is a great lager; you move up with probability q larger than half and down with probability 1-q each time you look at it.

I can force you to look at Radegast in the first period but I cannot control the impression you form; you get negative impression–move one step leftward–with the probability p, as always when you look at Radegast. You follow your own attention strategy from the second period on.

Prove that my attention-grabbing manipulation weakly increases the chance that you choose Radegast, relative to your own unmanipulated decision process. Your proof better doesn't apply to three beer brands since the result doesn't extend to multiple products without a further assumption.

Check Gossner, Steiner, and Stewart, 2019, “Attention Please!” for solution.