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Big Peanuts

By: Martijn van den Assem and Dennie van Dolder



The cameras are rolling. The presenter has just explained what each of you has to do: to choose between ‘splitting’ and ‘stealing’. Opposite you stands your opponent, who you have only just met and will never see again after the game is over. Together you have built a jackpot of £100,000. If you both choose to split, the two of you will share the jackpot equally and take home £50,000 each. If you choose to split while your opponent chooses to steal, you will get nothing and your opponent takes it all. If you steal while your opponent splits, you will receive the entire £100,000 jackpot. If you both opt to steal, both of you go home empty-handed. Millions of viewers will watch your choice on TV. What is your choice? Split or steal?

The final of the UK TV game show ‘Golden Balls’ all comes down to this decision. Anyone with a background in economics will probably recognize the well-known ‘prisoner’s dilemma’. One minor difference from the standard version – viewed from a purely material self-interest perspective – is that the non-cooperative choice (‘defect’) is weakly dominant rather than strictly dominant: if the other steals your choice has no effect on your own winnings, as either option will leave you empty-handed.

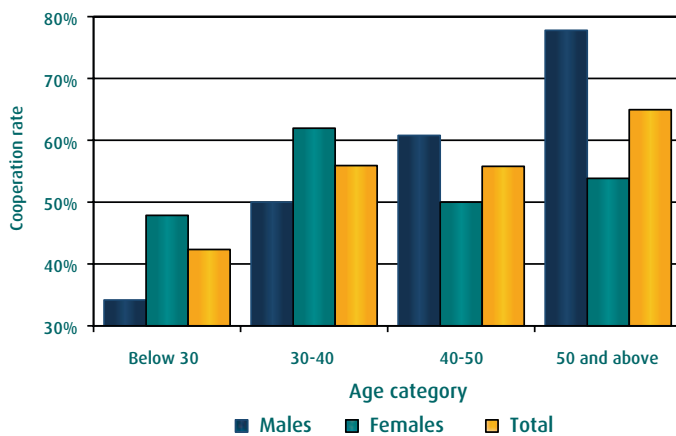
The abovementioned situation roughly describes the situation in which the contestants Stephen and Sarah found themselves. It made good TV viewing, and anyone curious about what happened should definitely watch the final via YouTube (www.youtube.com/watch?v=p3Uos2fzIJ0).

Together with our colleague Richard Thaler from Chicago University, we conducted a study into the choices of 574 finalists. The show provides an excellent opportunity to study cooperative behavior. As a result of the fixed rules and circumstances the show resembles the behavioral experiments in psychology and economics. Given that the game show was not designed by researchers for scientific purposes, this experiment is in the category of ‘natural’ experiments. Compared to conventional experiments, the show has the advantage that large sums of money are at stake (average ≈ £13,400). Combined with the rather unusual setting of a TV studio and the diversity across participants, Golden Balls provides a unique opportunity for testing the robustness of existing experimental findings. We will briefly describe some of our main findings; anyone interested to read more can find our paper at ssrn.com/abstract=1592456.

As in the average prisoner’s dilemma experiment, roughly half of the contestants (53 percent) opt for the cooperative alternative, in this case ‘split’. Although the percentage is probably influenced by the visibility of the decisions, this finding confirms the importance of motives other than purely financial ones.

When we try to explain the choices made by contestants using demographic and game-related variables, we find, among other things, evidence that people have a preference for reciprocity: contestants like to pay back in kind. Each episode starts with four contestants, and only two make it to the final via two voting rounds. It sometimes happens that one of the finalists had unsuccessfully attempted to vote the other finalist off the show during the elimination rounds, and this is found to have a large impact on the decision to either ‘split’ or ‘steal’. The probability of someone choosing ‘split’ drops by as much as 21 (!) percentage points if she faces an opponent who has tried to vote her off: an eye for an eye, a tooth for a tooth.

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Lies, however, are not punished. Voting in the elimination rounds is based on the set of 'golden balls' that each player has in front of her. The balls contain monetary amounts that are relevant for the size of the final jackpot. The contents of some balls are hidden for other players, and players can lie to conceal their poor contribution and try to avoid being voted off. Lies are always revealed immediately after the vote. In contrast to an attempt to vote someone off, lies do not affect the decisions in the final. One explanation could be that lies are purely defensive in nature here, and not aimed at a specific opponent. Besides, we neither find any evidence that liars are less cooperative in the prisoner's dilemma.

Rather surprisingly, we find no support for so-called conditional cooperative preferences, defined as a preference for matching the (expected) choice of the opponent (splitting if the opponent splits and stealing if she steals). Players can guess the choice of their opponent reasonably well if they would take into account whether or not the opponent explicitly promised to split. Right before the decision to split or steal, contestants are allowed to chat with each other. If an opponent explicitly promises to split the likelihood that she indeed does so rises by 31 (!) percentage points. In spite of this, players do not condition their choices on such promises. Players neither condition on their opponent's demographic characteristics, despite the predictive power of some of these.

For the effects of age and gender, we find that young men are less cooperative than young women. The figure shows the relative frequencies of splitting contestants across different age categories and subdivided into men and women. Our regression analyses indicate a difference of 22 (!) percentage points for 20-year-olds. The difference, however, decreases with age. Men are more cooperative the older they are, and, from an age of about 46 onwards men are even more likely to split than women.

In our sub-study into the role of demographic factors, we also examined whether students behave differently from 'normal' people. Some researchers are concerned about the generalizability of results from experiments that use students as 'guinea pigs', but in our data we find no indications for a different attitude toward cooperation among students other than what should be expected on the basis of their age and education profile.

The most interesting result from our study is perhaps the evidence that we have found for – what we call – a 'big peanuts' phenomenon. Choices are largely insensitive to the size of the jackpot: contestants cooperate about 50 percent of the time, irrespective of whether they are playing for a couple of thousand or one hundred thousand pounds. Striking, however, is the high degree of cooperation when the jackpot is relatively small: for amounts of several hundred pounds, 70 percent of the contestants choose to split. This high rate leads us to suspect that in the context of the game – in which a jackpot of ten thousand pounds is 'normal' – sums of money that are normally viewed as 'large' (in experiments, the largest winnings are typically no more than a few tens of pounds) are perceived as being relatively 'small'. Although a couple of hundred pounds may appear to be peanuts, these are BIG peanuts!

The conclusion that players 'think relatively' also follows from another part of our analysis. The players who reach the final determine the ultimately level of the jackpot by drawing five golden balls from the balls that are left over from the previous rounds. Prior to this draw, a great deal of attention is paid to the maximum possible jackpot. During the show's first seasons – when few or no episodes of Golden Balls had been broadcast at the time of recording and contestants were not yet able to accurately estimate what they should expect to win in the show – we find that the choices of contestants are strongly influenced by the maximum potential jackpot prior to the final: the higher their maximum jackpot, the smaller the actual jackpot appears, and the greater the likelihood that players cooperate. Amounts perceived as negligible – peanuts – apparently are not worth stealing, especially not on TV.

Our findings confirm a similar result for risk behavior identified in another game show, 'Deal or No Deal'. In that context – where the stakes were even larger – sums of tens of thousands were viewed as small when hundreds of thousands had just been at stake. These are very big peanuts indeed!

References

Van den Assem, Martijn J., Dennie van Dolder, and Richard H. Thaler. 2011. 'Split or Steal? Cooperative Behavior When the Stakes Are Large.' *Management Science*, Forthcoming. Available at SSRN: <http://ssrn.com/abstract=1592456>

