

Narrow Bracketing Design October 2019

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October 9, 2019

Rational for new design

Our initial design as registered in the AEA registry (<https://doi.org/10.1257/rct.3412-2.0>) was going to use the difference between doing some work BEFORE and AFTER doing, say, 20 tasks in session 2 to identify narrow bracketing. The idea was that people who are asked to do 10 tasks before doing 20 tasks might be more willing to do so (assuming increasing disutility of doing tasks) than those doing 10 tasks after, because they are thinking of doing 10 easy tasks (the first 10) rather than 10 hard ones (the last 10). Yet, in both cases the choice is identical, since doing 10 tasks first also makes the later 20 tasks harder.

While we have not run this design, we realized one major issue with it. If people bracket very narrowly, then they may ignore when they do the tasks and focus on “How willing am I to do 10 tasks”. In that case, we would find no effect, yet it would be precisely because people bracket even more narrowly than we expected by not taking into account the timing at all.

Another issue is that our earlier design required us to have two sessions: if people bracket narrowly and have present bias, then people doing work BEFORE may consider this work to be less desirable than doing work AFTER. Thus subjects with present bias and narrow bracketing would be less willing to work BEFORE than AFTER, which would lead to a null result, despite there actually being an effect. In order to avoid this, we were going to ask people about their willingness to do additional work in a second session in the future. This increases costs substantially (in a separate experiment with multiple periods on MTurk, one of us ended up paying a \$10 return fee to MTurk workers in order to avoid attrition).

We came up with the following one-session design which tests whether subjects narrowly bracket effort choices via a between subjects design.

Design as of October 2019

In our new design, we do the following:

One-day sessions:

1. Treatment Narrow10X: 10 tasks, 5 piece-rates, \$1 HIT fee, bonus of \$X.
2. Treatment Narrow20X: 20 tasks, 5 piece-rates, \$1 HIT fee, bonus of \$X.
3. Treatment Narrow20Y: 20 tasks, 5 piece-rates, \$1 HIT fee, bonus of \$Y.

Y should be such that for the second-highest piece-rate we have that 10 times that piece-rate = Y - X. That way, for this piece-rate a broad bracketer faces exactly the same choice set for this piece-rate, thus there should be no difference in responses for that piece-rate, even if people have specific income goals or the like.

Letting T be the number of tasks subjects have to do and Z the number of tasks subjects choose, broad bracketing with linear utility of money and increasing disutility of work predicts that $T + Z$ is the same across treatments, since subjects should work until the marginal disutility of effort equals the piece-rate.

Thus the broad bracketed prediction (under linear utility of money) is that $Z_{20} + 10 = Z_{10}$, whereas full narrow bracketing predicts $Z_{20} = Z_{10}$. We expect that people bracket somewhat broadly, and we'll get a population average such that $Z_{20} \leq Z_{10} < Z_{20} + 10$.¹

¹With narrow bracketing and present bias one might even get $Z_{10} < Z_{20}$. Such a result would be hard without narrow bracketing.

However, a person who has to do 20 tasks rather than 10, but receives the same amount \$X for this may want to work more due to income effects (they are poorer) or more plausibly due to some daily income target. For this reason, we have the treatment where the payment is such that it offsets exactly 10 tasks at one of our high piece-rates. That way, if a person who is assigned 10 tasks does 15 tasks, they earn exactly as much in total as a person assigned 20 tasks and doing 5 tasks. In addition, their marginal incentives (the piece-rates) are also the same. We include an intermediate treatment where we increase the tasks from 10 to 20, but do not change total pay, to identify the effect of tasks and money along – however we will use a smaller sample size for this treatment, as the cleanest – and most important – comparison is between narrow10X and narrow20Y for the one specific piece-rate.

While with broad bracketing and income targeting/effects the prediction is clear for this one piece-rate, for the other piece-rates we should have that $Z_{20} + 10 > Z_{10}$ for higher piece-rates (subjects doing 20 tasks have lower income) and $Z_{20} + 10 < Z_{10}$ for lower piece-rates. Thus for all piece-rates that are low, we have that broad bracketing predicts $Z_{20} < Z_{10} - 10$, while narrow bracketing (without income effects) predicts $Z_{20} \approx Z_{10} > Z_{10} - 10$.

Additionally, we add ‘broader’ versions of our treatments, where we highlight to subjects the total number of tasks they are signing up for. Thus the sliders they choose start at the number of required tasks (10 or 20), and the current choice is highlighted as 10 or 20 plus the number of additional tasks. That way, it is made very salient what the background tasks are. We expect this to attenuate the difference between Z_{10} and Z_{20} , but it needn’t lead to full broad bracketing.

3. Treatment Broader10X: 10 tasks, 5 piece-rates, \$1 HIT fee, bonus of \$X, and the slider starts at 10, not at 0 tasks (highlighting the existing tasks)
4. Treatment Broader20X: 10 tasks, 5 piece-rates, \$1 HIT fee, bonus of \$X, and the slider starts at 10, not at 0 tasks (highlighting the existing tasks)
5. Treatment Broader20Y: 20 tasks, 5 piece-rates, \$1 HIT fee, bonus of \$Y, and the slider starts at 20 not at 0 tasks.

Two-day design

One advantage of our earlier design where people would choose to do 10 tasks BEFORE or AFTER doing 30 tasks was that these were more obviously the same choice and that we had a choice that forces broad bracketing: Tell people that they are choosing between 30 tasks or 40 tasks and \$X. In our case, due to choosing the number of tasks, it is not obvious that even our broader treatment forces people to think broadly, in particular they may fail to integrate money.

We are currently considering whether we can combine the BEFORE and AFTER with our current design, but we have not yet found a framing that we consider to yield broad bracketing reliable for choices where subjects can choose the number of tasks. The goal however is to run our new design with two periods.