Rushing towards virtue: time pressure increases socially desirable responding

John Protzko, Claire M. Zedelius, Jonathan W. Schooler

Abstract

The oldest method in psychology of trying to gain access to one part of a divided mind is to instruct participants to answer quickly. Here we propose an alternative account for this procedure, namely, that it makes people give the socially desirable response. We randomly assigned 1,500 Americans to answer a social desirability scale either quickly or slowly. We use an intention-to-treat analysis to test the effects quick vs. slow responding on social desirability. We show quick responding causes an increase in social desirability. We propose that a number of findings using the fast/slow responding manipulation can be partially or entirely explained by participants' giving the socially desirable response. Future investigations using the time pressure manipulation should account for social desirability to ensure the results are not entirely driven by this mechanism. This study was pre-registered prior to data collection at <https://osf.io/rt6un/>.

Introduction

One of the oldest reflections on the human psyche is that of a divided mind: an intelligent driver working to constrain the passions (Plato, 370 bce/Fowler, 1917). When psychology started to develop as a discipline, this divided mind tradition continued (Freud, 1927/2018). Since then, the popularity of dual process and dual systems models dividing the human mind into a rational/reasoning and a more intuitive/impulsive/spirited system has hardly diminished (e.g., Evans, & Stanovich, 2013; Hofmann, Friese, & Strack, 2009; Kahneman, 2011; Strack & Deutsch, 2004, 2015). A number of methods have been used to get to the inner workings of the two minds, but none has a longer history than asking for speeded/non-reflective responses (Jung, 1910, p. 220). Asking participants to answer quickly (versus no instructions or a forced delay) has been theorized to grant the experimenter access to the intuitive, constrained mind.

This method has been argued to show that people are, *deep down*, prosocial and cooperative with others (Cone & Rand, 2014; Nielsen, Tyran, & Wengström, 2014; Rand et al., 2012, 2017; Evans, Dillon, & Rad, 2015; but, see Recalde, Riedl, & Vesterlund, 2017; Tinghög et al., 2013; Verkoeijen & Bouwmeester, 2014, for contrasting evidence). Under time pressure, people also tend to make non-optimal decisions and forego the possibility of profit maximization (Sutter et al., 2003; Cappelletti et al., 2011; Kahneman, 2011; Lindner & Sutter, 2013). Moreover, time pressure has been argued to *reveal* a deontological inclination in people's moral judgments (i.e., a tendency to base moral judgments in emotional dilemmas on rules about rights and duties, rather than outcomes; Suter & Hertwig, 2011). Here we propose an alternate explanation to the effect of time pressure: Namely, that it makes people respond in a more socially desirable way.

It is socially desirable to give more money and trust others. It is socially desirable to take others' needs and interests into account instead of maximizing one's own return on investment or decision calculus (see Spiliopoulos et al., 2015). It can be considered socially desirable to make moral judgments based on deontological ethical norms rather than a pragmatic calculation of costs and benefits. Unfortunately, socially desirable responding can inflate or deflate reports of behaviors or answers, resulting in biased estimates and incorrect empirical findings (e.g. Cote & Buckley, 1988).

We set out to test the hypothesis that people are more likely to give the socially desirable answer when encouraged to answer quickly in a large sample of the American adult population, matched to resemble the demographics of the United States.

Methods

Participants

We collected data from 1500 participants drawn in a stratified way with unequal probabilities of selection so that participants resemble the nation's adult population. Participants were invited to complete the study through a survey company (CriticalMix). The sample size was determined a priori to maximize power and not on the basis of any power analysis as the expected effect size was unknown.

Procedure

Participants were randomly assigned to answer a short social desirability scale in either a fast or slow condition. All participants were first told: "We are going to ask you 10 true or false

questions on one page at a time. These statements are about your personal attitudes and characteristics. Please read each statement carefully and indicate whether it is true or false, that is, whether it applies to you or not.”

On the next page, participants were told [based on fast/slow condition]: Please continue reading **now**. The next screen will appear **very soon**. On the next 10 screens, you will need to **read and [answer each question in less than 11 seconds/ think for more than 11 seconds for each question before submitting your answer** in order to receive payment. If you [take more than 11 seconds to submit your decision/submit your decision in less than 11 seconds, **you may not get paid**." This screen automatically moved on after 15 seconds. This was done in order to increase compliance to the fast or slow conditions (following Isler et al., 2018). All participants were paid regardless of their compliance.

Measure

One page at a time, participants were given the short 10-item social desirability scale (Vésteinsdóttir et al., 2017). These questions were presented in complete random order (see Table 1).

Table 1: Items administered from the Short Social Desirability Scale. All questions answered either False/True. False was coded as 0 and True coded as 1 unless reversed scored (R).

I have never intensely disliked anyone
I sometimes feel resentful when I don't get my way (R)
No matter who I'm talking to, I'm always a good listener
There have been occasions when I took advantage of someone (R)
I'm always willing to admit it when I make a mistake
I sometimes try to get even, rather than forgive and forget (R)
There have been occasions when I felt like smashing things (R)
There have been times when I was quite jealous of the good fortune of others (R)
I have never felt that I was punished without cause
I have never deliberately said something that hurt someone's feelings

The total score on the scale was the dependent variable.

Participants were also randomly assigned to answer in either a False-True (True on the right) response option or True-False (True on the left) condition. This was done because it was suggested that time pressure may make people click on one side of a screen more often.¹

Results

We thus tested whether asking participants to answer quickly vs. slowly caused an increase in social desirability. We did not predict an effect of left/right orientation or an interaction between the two. Regardless, our analysis was completed as a fully crossed 2x2 ANOVA with 10,000 bootstrap resamples to take into account any possible non-normalities in the data.

There has been discussion about compliance in speeded judgment literature (see for example Rand, 2017). The most conservative and unbiased approach to compliance in experimental trials is the Intention-To-Treat analysis (ITT), which simply ignores compliance and analyzes the data as the participants were randomized. The benefit of this approach is that it preserves randomization across conditions (see Gelman & Hill, 2006). Thus, we pursued an ITT analysis. All procedures, data decisions, and analysis code was pre-registered prior to data collection (<https://osf.io/rt6un/>).

Manipulation check: on average participants in the fast condition answered questions faster ($M = 4.77$, $SD = 6.827$) than in the slow condition ($M = 11.98$, $SD = 15.469$, $\beta(1498) = -$

¹ We thank Leif Nelson for this suggestion

.29, $p < .001^2$). Compliance on time instructions (averaged over all 10 questions) showed greater compliance in the fast group (97%) than in the slow group (43%). As our analysis plan only uses the ITT estimate, non-compliance would only serve to weaken our hypothesized effects. Results from an instrumental variable analysis accounting for compliance on social desirability returns the same results as below.

Comparison of the magnitude of socially desirable responses in the quick and slow conditions confirmed the hypothesized effect. Asking people to answer quickly causes them to give more socially desirable responses ($M = 5.069$, $SD = 2.55$) than asking them to answer slowly ($M = 4.722$, $SD = 2.358$; $F(1, 1496) = 7.559$, $p = .006$, $d = .142$, 95%CI = .04 to .243; see Figure 1).

² Results stay the same for a separate-variance t -test

Figure 1: Effect of asking participants to answer slowly or quickly on social desirability. Error bars represent 95% CI from bootstrap ANOVA. Results come from the ITT analysis of assignment.

Switching the socially desirable response to the left or right side did not change the results, nor was there an interaction with time pressure and left or right answers (both $ps > .48$; cf. Holbrook et al., 1999; Recalde et al., 2017). Importantly, when the social desirability scale is administered without reference to time at all, allowing participants to answer as quickly or as slowly as they please, the results are the same as asking participants to answer slowly ($M = 4.48, SD = 2.51$; Vésteinsdóttir et al., 2017)ⁱ. Thus, it is not that asking participants to answer slowly decreases socially desirability. To further verify this, we ran a replication with the basic procedure with 1,500 participants randomly assigned to only the slow condition or no instructions (<https://osf.io/kpbg3/>). Results were not significantly different between the groups ($t_{\text{separate-variance}}(1493.591) = 1.285, p > .19$).

Accounting for non-compliance

Compliance was calculated by averaging the amount of time participants spent on each question. Participants were coded as compliers if their average time was less than 11 seconds in the speeded condition or greater than 11 seconds in the delayed condition. We then constructed a two-stage least squared analysis on the data (see Gelman & Hill, 2006). This approach is an instrumental variable approach where the instrument is the group randomization, which is truly random (by design in this study). The analysis regresses compliance on the group assignment, then regresses social desirability on the modelled predictions for compliance. This is the approach used in encouragement designs and is applicable here.

The results of this analysis showed the same basic effect. Answering quickly when encouraged to do so caused an increase in social desirability ($M = 5.086$) compared to answering slowly when encouraged to do so ($M = 4.44$, $b_{ivreg} = .647$, $p = .007$, 95%CI = .178 to 1.116). Thus, the results are robust to non-compliance with the timing manipulation.

Does the time pressure effect occur on only some items?

To answer this question we engaged in a series of tests of measurement invariance (MI) to test whether the effects of speeded manipulation was on the latent ‘social desirability’ factor or on some other aspect of the measurement process. To accomplish this, we fit a series of models decreasing in equivalence parameters. We started with a strict invariance model, testing the two groups in a multi-group confirmatory factor analysis (MGCFA), as the groups occurred through randomization and were not naturally-occurring groups.

We fit the same single-factor model to the data, and reduced the equivalence parameters, testing for decrements in model fit. We followed the convention of $\Delta CFI > .01$ and $\Delta RMSEA > .015$ (Cheung & Rensvold, 2002). The results show, as shown in Table 1, the model with strict invariance had the best fit of all of the models. Thus, we can confidently say the same construct was being measured similarly in both groups. Furthermore, the effect of time pressure on social desirability from the strict invariance model with 10,000 bootstrapped confidence intervals was nearly identical ($\beta = .177, p = .004, 95\% CI = .057$ to $.297$) to the simple summary score analysis ($d = .142, p = .006, 95\% CI = .04$ to $.243$).

Table 1: Model fit indices of different models of different measurement constraints

Testing Strict Invariance		
Model	CFI	RMSEA
Strict Invariance/Scalar	.901	.065
Unequal Intercepts (Metric)	.901	.065
Unequal Factor Structure (Configural)	.905	.067
Baseline Model	.905	.067

Thus, the effect of increasing socially desirable responding is not an artifact of acquiescence bias (Tourangeau et al., 2000), as positively and negatively coded items were equally affected. This supplementary analysis also shows that the manipulation did not operate on only some items, as it would cause a violation of intercept invariance, not seen here.

To answer the question: “What does making people respond quickly *do*?” we can answer that the evidence here suggests time pressure causes an increase in socially desirable responding.

Discussion

The results here show that the method of asking participants to answer quickly causes an increase in socially desirable responding. This finding suggests an alternate explanation to a number of findings using the ‘decide fast’ manipulation. Making people decide quickly whether they should cooperate in a competitive game increases cooperation because people are (deep down) prosocial, for example (Cone & Rand, 2014); alternatively the cooperation could partially or completely be driven by doing the socially desirable option. Making people decide quickly whether it is okay to kill a crying baby to save other lives leads to more ‘no’ responses because people deep down do not engage in utilitarian calculus and instead hold certain obligations such as do not kill (Suter & Hertwig, 2011); alternatively it is the socially desirable option to answer ‘no’ to such questions.

Such an alternate explanation is only present in situations where social desirability is related to the outcome variable. In those instances, social desirability may be a partial or the entire cause of the result (which can be assessed through a mediation strategy). In instances where the outcome is unrelated to socially desirable responding (e.g. analyzing reasons in cognitive dissonance, Wilson et al., 2001), alterations to the speed of responding are unlikely to be explained by giving the socially desirable response.

There seems to be little doubt that asking people to answer quickly grants us access into an otherwise overridden part of the human mind. The method is over a century old, and will no doubt continue into the future. What we show here is that asking people to answer quickly also has unintended side effects, ones that may alter our interpretations of results. We do not propose that answer quickly *only* increases socially desirable responding, but it is an alternate explanation that must be addressed in future uses of time pressure.

Authorship Statement

P., C.Z., and J. W. S. developed the study concept. All authors contributed to the study design. Testing and data collection and data analysis were performed by P. P and C. Z drafted the manuscript, all authors provided critical revisions. All authors approved the final version of the manuscript for submission.

Acknowledgments:

We acknowledge the support of grant #44069-59380 from the Fetzer Franklin Fund to J. W. S.

References

- Cappelletti, D., Güth, W., & Ploner, M. (2011). Being of two minds: Ultimatum offers under cognitive constraints. *Journal of Economic Psychology*, 32(6), 940-950.
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling*, 9(2), 233-255.
- Cone, J., & Rand, D. G. (2014). Time pressure increases cooperation in competitively framed social dilemmas. *PLoS one*, 9(12), e115756.
- Evans, J. S. B., & Stanovich, K. E. (2013). Dual-process theories of higher cognition: Advancing the debate. *Perspectives on Psychological Science*, 8(3), 223-241.
- Evans, A. M., Dillon, K. D., & Rand, D. G. (2015). Fast but not intuitive, slow but not reflective: Decision conflict drives reaction times in social dilemmas. *Journal of Experimental Psychology: General*, 144(5), 951.
- Fowler, H. N. (1917). *Plato*. London : H. Heinemann ; New York : G. P. Putnam's sons
- Freud, S. (2018). *The ego and the id*. Courier Dover Publications.
- Gelman, A. & Hill, J. (2006). *Data Analysis Using Regression and Hierarchical/Multilevel Models*. New York: Cambridge University Press.
- Hofmann, W., Friese, M., & Strack, F. (2009). Impulse and self-control from a dual-systems perspective. *Perspectives on Psychological Science*, 4(2), 162-176.
- Holbrook, A. L., Krosnick, J. A., Carson, R. T., & Mitchell, R. C. (2000). Violating conversational conventions disrupts cognitive processing of attitude questions. *Journal of Experimental Social Psychology*, 36(5), 465-494.

- Isler, O., Maule, J., & Starmer, C. (2018). Is intuition really cooperative? Improved tests support the social heuristics hypothesis. *PloS one*, 13(1), e0190560.
- Jung, C. G. (1910). The association method. *The American journal of psychology*, 21(2), 219-269.
- Kahneman, D. (2011). *Thinking, fast and slow*. Macmillan.
- Kelemen, D., Rottman, J., & Seston, R. (2013). Professional physical scientists display tenacious teleological tendencies: Purpose-based reasoning as a cognitive default. *Journal of Experimental Psychology: General*, 142(4), 1074-1083.
- Lindner, F., & Sutter, M. (2013). Level-k reasoning and time pressure in the 11–20 money request game. *Economics Letters*, 120(3), 542-545.
- Mischkowski, D., Thielmann, I., & Glöckner, A. (2018). Think it through before making a choice? Processing mode does not influence social mindfulness. *Journal of Experimental Social Psychology*, 74, 85-97.
- Nielsen, U. H., Tyran, J. R., & Wengström, E. (2014). Second thoughts on free riding. *Economics Letters*, 122(2), 136-139.
- Rand, D. G. (2016). Cooperation, fast and slow: Meta-analytic evidence for a theory of social heuristics and self-interested deliberation. *Psychological Science*, 27(9), 1192-1206.
- Rand, D. G. (2017). Reflections on the time-pressure cooperation registered replication report. *Perspectives on Psychological Science*, 12(3), 543-547.
- Rand, D. G., Greene, J. D., & Nowak, M. A. (2012). Spontaneous giving and calculated greed. *Nature*, 489(7416), 427.

- Recalde, M. P., Riedl, A., & Vesterlund, L. (2017). Error prone inference from response time: The case of intuitive generosity. CESifo Working Paper Series No. 4987. Available at SSRN: <https://ssrn.com/abstract=2507723>
- Spiliopoulos, L., Ortmann, A., & Zhang, L. (2015). Complexity, attention and choice in games under time constraints: A process analysis. <http://ssrn.com/abstract=2620163>.
- Strack, F., & Deutsch, R. (2004). Reflective and impulsive determinants of social behavior. *Personality and Social Psychology Review*, 8(3), 220-247.
- Strack, F., & Deutsch, R. (2015). The duality of everyday life: Dual-process and dual system models in social psychology. *APA handbook of Personality and Social Psychology*, 1, 891-927.
- Suter, R. S., & Hertwig, R. (2011). Time and moral judgment. *Cognition*, 119(3), 454-458.
- Sutter, M., Kocher, M., & Strauß, S. (2003). Bargaining under time pressure in an experimental ultimatum game. *Economics Letters*, 81(3), 341-347.
- Tinghög, G., Andersson, D., Bonn, C., Böttiger, H., Josephson, C., Lundgren, G., ... & Johannesson, M. (2013). Intuition and cooperation reconsidered. *Nature*, 498(7452), E1.
- Tourangeau, R., Rips, L. J., & Rasinski, K. (2000). *The psychology of survey response*. Cambridge, England: Cambridge University Press.
- Verkoeijen, P. P., & Bouwmeester, S. (2014). Does intuition cause cooperation?. *PloS one*, 9(5), e96654.
- Vésteinsdóttir, V., Reips, U. D., Joinson, A., & Thorsdottir, F. (2017). An item level evaluation of the Marlowe-Crowne Social Desirability Scale using item response theory on Icelandic Internet panel data and cognitive interviews. *Personality and Individual Differences*, 107, 164-173.

ⁱ Exact number through personal communication with Dr. Vésteinsdóttir, 2018