

Choice Alone: Choice, Motivation, and Performance

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## **Abstract**

Past research and folk wisdom endorse the idea that provision of choice increases motivation and performance. We tested whether the provision of choice between two simple online tasks increased motivation or performance for 49 participants randomly assigned to either a choice or no choice condition. In both cases, we retained the null hypothesis: we did not find significant effects of choice on either motivation or performance for our experimental tasks. We also consider directions for future research on attributes of choices that would influence outcomes for motivation and performance.

## **Introduction**

Imagine trying to help a child get ready for bed: she needs to brush her teeth and take a shower, and she doesn't particularly want to do either. One possibility is simply to command "You need to brush your teeth and then take a shower." However, another approach is to offer a choice, "Would you rather brush your teeth or take a shower?" Various source of parenting advice advocate for the second approach—to offer a choice. Beyond this folk wisdom, many psychological studies have linked the provision of choice to increased motivation (Iyengar & Lepper, 2000). Still, the question remains: does simply offering a choice increase motivation, independent of other factors?

The question of whether offering a choice causes an increase in motivation and performance has important implications. For instance, the question of whether choice alone is motivating has implications for the design of behavioral interventions, market research, and education.

This paper examines how choice affects motivation and performance in two simple tasks. We set out to isolate the variable of choice and analyze its effects on participants' motivation and performance on two simple tasks. Our results suggest that choice alone does not cause an increase in motivation and performance. We explore possible explanations for our results as well as results of prior studies that have linked choice to motivation and performance.

## **Literature Review**

Current research on choice and motivation supports the view that choice is intrinsically motivating. According to a literature review conducted by Iyengar and Lepper (2000), "decades of psychological theory and research...has repeatedly demonstrated, across many domains...that the provision of choice increases intrinsic motivation and enhances performance on a variety of tasks." One representative lab study found that participants who could choose which puzzles to solve were more intrinsically motivated than those without the choice (Zuckerman et. al., 1978). Similarly, several experiments by Perlmutter and Monty (1977) supported the idea that the perception of choice enhanced performance. Further research by Tararodi, Milne, and Smith (1999) provided additional evidence that offering a choice over aspects of a task could enhance performance. In a field study, Langer and Rodin (1976) found that giving nursing home residents freedom to make decisions about how to care for a plant increased their "alertness" and "active participation" compared to a control group. Another field study found that the provision of choice to children in a behavioral weight control program significantly enhanced outcomes (Mendoca & Brehm, 1983). Explaining such results, many psychological theories suggest that the ability to make a choice gives individuals a sense

of control that is intrinsically motivating, and that can enhance self-efficacy and performance (Iyengar & Lepper, 2000; Tafarodi et. al., 1999).

Though there is strong evidence for a link between choice and increased intrinsic motivation and performance, some research has found effects that contradict that idea. The most notable counter-argument to the idea that choice increases motivation and performance is the idea that certain kinds of choices can be overwhelming and ego-depleting, damaging both motivation and performance. One study found that offering an extensive number of choices (greater than 20) led individuals to be less motivated and perform worse than individuals offered fewer (6) choices (Iyengar & Lepper, 2000). This finding suggests that choice alone may not account for the increase in motivation and performance in prior studies, since increasing choice past a certain threshold was demotivating. Moller, Deci, and Ryan (2006) explored a related issue, comparing different types of choices. They found that making an autonomous choice about a task increased participants' motivation, while making a controlled-choice, one where options were presented but participants felt pressure to select a certain option, was demotivating. Despite evidence that supports the idea that choice increases intrinsic motivation and performance, there is not conclusive evidence that choice and choice alone are responsible for effects observed in prior studies.

## **Our Study**

Previous research favors the idea that the provision of choice increases intrinsic motivation and performance. However, it remains ambiguous whether choice alone inherently causes the positive effects observed in prior studies. For instance, one plausible alternative

explanation for results observed in many prior studies is that participants who were offered a choice were motivated by the social interaction with the researcher. In our study, we tried to isolate the factor of choice to analyze whether it truly increases motivation and performance.

We address two research questions:

RQ1: Does offering a choice increase intrinsic motivation on a task?

RQ2: Does offering a choice improve performance on a task?

## **Method**

### **Sample**

For this experiment, participants were selected using a convenience sample. Participants were recruited through invitations to the event “Participate in an Experiment!” on the social networking website Facebook. Though the event was publicly posted, the participants were friends and acquaintances of the research team.

We used a convenience sample because the focus of our study was on examining the causal role of choice in motivation and performance; the generalizability of our results was not our primary concern. Recruiting friends and acquaintances as volunteers allowed us to collect responses at minimal cost.

### **Demographics**

We collected responses from 52 participants. We did not formally collect demographic data from participants, since we did not believe that it would be highly relevant. Additionally, collecting demographic data would have added to the time necessary to complete the

experiment, possibly reducing the response rate. Still, we were able to get a sense of the demographics from the list of “attendees” on our Facebook event page. The participants were primarily college students attending either Carnegie Mellon University or other universities. A few participants were outside this demographic—younger high school students and one older (age 50+) adult.

### **Filtering**

Of our 52 respondents, three clicked on the link to our survey but did not continue past the first page of the survey. These individuals were excluded from our analyses, so we had 49 complete response sets.

### **Procedure**

The two experimental tasks in this study were incorporated into a Qualtrics survey. A link to the survey was distributed via a Facebook event page entitled “Participate in an Experiment!” When participants clicked the link to the survey, they were randomly assigned to either a choice or no-choice version of the survey. Participants were presented with two tasks: ordering a list of names alphabetically (name task) and ordering a list of numbers by increasing magnitude (number task).

Participants in the choice condition were asked which task they would prefer to complete first, completed that task, then went on to finish the second task. Participants in the no-choice condition were presented with identical tasks, but instead of being presented with a question asking which task they would like to complete first, they were told explicitly to complete the two tasks in a random order.

Since neither of the tasks was designed to be equally appealing, we expected that participants with a choice would have about a 50/50 split between the two tasks. Therefore, we arranged the survey such that about half of the no-choice participants would complete the tasks in each possible order. The rationale for this was that if all the no-choice participants were assigned to complete the tasks in a single-order, the order might introduce a bias into their responses in comparison to the participants in the choice condition.

After completing the experimental name and number ordering tasks, we presented all participants with a brief follow-up survey. Participants rated their own motivation and performance for each of the tasks. Participants also rated the difficulty of each task. Additionally, we performed a manipulation check: we asked participants in the choice condition if they liked being able to choose which task to complete first, and we asked participants in the no-choice condition if they would have preferred to be able to choose which task to complete first. Finally, participants were given the opportunity to write questions or comments about their experience.

## **Measures**

We measured subjects' motivation and performance in two ways. We also measured participants' motivation and performance through their responses to self-report questions after they completed the experimental tasks. Participants rated how much they agreed with eight statements related to their motivation and performance on the task on a five-point Likert scale. Having participants rate themselves on the same scale for each task allowed us to more easily

quantify and compare their responses. Additionally, we collected data on participants' clicks and the time that they spent on each task, as well as their solutions for each task.

## **Results**

### **Manipulation Check**

As a manipulation check, we included a question at the end of each version of our tasks and survey. We asked participants in the choice condition how much they agreed with the statement, "I liked being able to choose which task to complete first." Similarly, we asked participants in the no-choice condition how much they agreed with the statement "I would have preferred to be able to choose which task to complete first." The results of our manipulation check, like many of results the results that follow, were somewhat confounding. Participants in the choice condition ( $N=24$ ) on average agreed that they liked being able to choose which task to complete first ( $M=3.71$ ,  $SD=0.999$ ). However, participants in the no-choice condition ( $N=25$ ), on average said that they would not have preferred to choose which task to complete first ( $M=2.56$ ,  $SD=0.821$ ). Since participants did not have a neutral response to these follow-up questions, we do think that we successfully manipulated choice. However, this result suggests that the offer of a choice alone may not be motivating.

### **Responses**

We collected 49 total valid responses. Twenty-four of the participants were randomly assigned to the choice condition. Of those, 16 chose to complete the name task first and 8 chose to complete the number task first. There were 25 participants assigned to the no-choice condition. Of those, 12 were randomly assigned to complete the name task first and 13 were



assigned to complete the number task first. The proportion of participants in each condition is shown in Figure 1.

## Choice and Motivation

### Motivation Scale

Contrary to past research on choice and motivation, we did not find a significant relationship between the provision of choice and an increase in participants' motivation. We measured motivation using a scale constructed from participants' self-reports.

After completing both tasks, participants answered eight questions related to their motivation. One of those questions simply asked participants how much they agreed with the statement "I was motivated to complete this task", providing a self-reported measure of motivation. We conducted reliability analysis on the eight item scale on motivation for each task. Our refined scale consisted of five-items, which are shown below along with the reliability coefficient and inter-correlations.

Motivation Scale	
Items	1. "I didn't give this task my full attention." *
	2. "I didn't pay too much attention to accuracy in this task" *
	3. "I could have completed this task faster if I had tried harder." *
	4. "I was motivated to complete this task."
	5. "I completed this task as quickly as I could."
Split-half reliability (Guttman Split-Half Coefficient) 0.788	

\*= reverse-coded

**Correlation Matrix for Motivation Scale**

	1*	2*	3*	4	5	Total-Item
1*	1					0.73
2*	0.699409	1				0.649
3*	0.522592	0.258716	1			0.454
4	0.38595	0.549985	0.198259	1		0.487
5	0.58934	0.410768	0.45892	0.390144	1	0.602

### Effect of Choice on Overall Motivation

For both the name-sorting task and the number-sorting task, participants in the choice condition had slightly higher scale scores for motivation than their no-choice counterparts.

Figure 2.1 displays this trend. The mean motivation for participants in the choice condition over both tasks was 4.0625 (out of 5,  $SD = 0.597$ ), while the mean motivation for participants in the no-choice condition was 3.888 ( $SD = 0.645$ ). However, this finding was not significant ( $p = 0.637$ ).

When we measured motivation using solely participants' self-reports (item 4 on the scale), we found similar results: participants in the choice condition reported higher overall motivation ( $M = 3.77$  vs.  $3.6$ ), but the difference was not significant ( $p = 0.445$ ).

### Effect of Choice on Motivation for Each Task

We expected that participants in the choice condition would choose to do the task that they were more motivated to complete first. However, our comparisons within participants in the choice condition showed the reverse effect: participants' motivation was higher for the task that they completed second. We conducted a paired sample t-test to compare participants'

motivation on the task they chose to complete first versus the second task. Participants were significantly more motivated for the second task ( $M=4.1667$ ,  $SD=0.65585$ ) than the first ( $M=3.9583$ ,  $SD=0.58971$ ),  $t(24)=-2.865$ ,  $p=0.009$ .

To check that this was not merely the effect of task order, we also compared motivation on the first and second task for participants in the no-choice condition. Their motivation was marginally higher for the second task as well, but the effect was not significant. According to another paired-sample t-test, participants in the no-choice condition were more motivated for the second task ( $M=3.9120$ ,  $SD=0.690$ ) than the first ( $M=3.864$ ,  $SD=0.63435$ ) but not significantly so,  $t(25)= 0.782$ ,  $p=0.442$ .

## **Choice and Performance**

Participants were instructed to complete each task “as quickly and accurately as possible”. All of the participants who completed our survey had 100% accuracy in each of the tasks. Therefore, we measured performance for the tasks based on time. Overall trends in choice and performance for the choice vs. no-choice groups are shown in Figure 2.2.

We found no significant difference in performance between participants in the choice and no choice conditions, though participants in the no-choice condition took less time to complete both tasks. Participants in the choice condition took an average of 72.982 seconds ( $SD=24.202$ ) to complete both tasks, while participants in the no-choice condition took an average of 66.3874 seconds ( $SD=17.609$ ). However, this difference was not statistically significant ( $p=0.292$ ).

### **Performance on Each Task**

Overall, the mean time to submit the name task was greater for participants in the choice condition ( $M=39.8643$  seconds,  $SD=14.359$ ) than participants in the no-choice condition ( $M=33.1157$  seconds,  $SD=9.109$ ), but the difference was not significant ( $p=0.056$ ). For the number task, the mean time for participants in the choice condition was slightly lower ( $M=33.1177$ s,  $SD=12.236$ ) than the mean for participants in the no-choice condition ( $M=33.2717$ ,  $SD=11.099$ ), but the difference was not significant ( $p=0.879$ ).

### **Task Order and Choice**

Participants in the choice condition showed a strong tendency to choose to complete the name task first; 16 of 24 participants chose to complete the name task first. Because the name task was on average rated more difficult ( $M=2.02$ ,  $SD=0.854$ ) and took longer ( $M=36.421$ s,  $SD=12.325$ ) than the number task ( $M=1.51$ ,  $SD=0.545$ ;  $M=33.1963$ s,  $SD=11.547$ ), we were concerned that this biased our first-task vs. second-task results overall. Therefore, we matched participants based on the order in which they completed the tasks, and then analyzed differences between the two experimental groups.

### **Effect on Motivation**

For participants who completed the name task first, participants in the choice condition had a higher mean motivation for both tasks, though this difference was not statistically significant ( $p=0.868$  for name task,  $p=0.380$  for number task). Means for participants who completed the name task first are shown in Figure 3.1. On the other hand, for participants who completed the number task first, participants in the no-choice condition had a higher mean

motivation for both tasks, though this too, was not statistically significant ( $p=0.093$  for name task,  $p=0.453$  for number task). Means for participants who completed the number task first are shown in Figure 3.2.

### **Effect on Performance**

Of the participants who completed the name task first, those in the choice condition had worse overall performance on both tasks. That is, they took longer to complete each of the two tasks than participants in the no-choice condition, though the effect was only statistically significant for the second, number-ordering task ( $p=0.106$  for name task,  $p=0.014$  for number task). On the other hand, of the participants who completed the number task first, participants in the choice condition had better overall performance; they took less time to complete each of the two tasks, though the effect was not statistically significant ( $p=0.852$  for name task,  $p=0.113$  for number task).

### **Correlations Between Motivation and Performance**

Participants in the choice condition who completed the name task first had higher mean motivation but worse performance for both tasks. Similarly, participants in the no-choice condition who completed the number task first had higher mean motivation but worse overall performance. To investigate the trend of an inverse relation between motivation and performance, we checked for correlations between motivation and performance for each group. Though motivation and performance correlated across tasks, there was not a significant correlation between motivation and performance for either the name task-first or number-task first group. Correlations are shown in Figure 4.

## Discussion

### Findings

Our study addressed two questions:

RQ1: Does offering a choice increase intrinsic motivation on a task?

RQ2: Does offering a choice improve performance on a task?

We found no significant evidence that offering a choice would increase either intrinsic motivation or performance on a task. Our findings contradict other research which as linked choice to increased motivation and performance (Iyengar & Lepper, 2000). However, some of our findings seem to support existing research that also questioned the link between choice and motivation and performance.

We found different trends for the effect of choice on motivation and performance based on the order in which participants completed the two research tasks. We found that for participants who completed the name task first, participants in the choice condition had higher motivation but worse performance. For participants who completed the number task first, participants in the no-choice condition had higher motivation but worse performance. One possible explanation for this is that the name task was rated as more difficult, so individuals who chose to complete the more difficult task first may have been more motivated to begin with. One plausible explanation for the trend for more motivated participants to have worse performance in terms of time is that they were more conscientious as they completed the tasks.

One statistically significant finding was that participants in the choice condition were significantly more motivated to complete the second task than the one they chose to do first. Moller, Deci, and Ryan's (2006) research offers a possible explanation. They suggest that making autonomous choices boosts motivation. Participants could have become more motivated after completing the task which they chose first.

Overall though, for both of our research questions, we retained the null hypotheses, that choice does not increase intrinsic motivation on a task, nor does it improve performance. We do not believe that our study invalidates prior research linking provision of choices to increased motivation and performance, but we do believe that it is not the choice alone that was a causal factor in those studies. For instance, the rapport that a researcher builds with a participant by offering them a choice might increase motivation and/or performance.

## **Limitations**

One serious limitation for our conclusions is that the experimental tasks we used were not equally desirable for participants. Participants rated one task—the name ordering task—as more difficult than the other. Furthermore, participants who had a choice chose to complete the name ordering task first twice as often as they chose the other task. This suggests that differences between our tasks may have influenced our outcomes—adding the confound of the nature of the task to the independent variable of choice. Future studies should be more careful to test various dimensions of tasks to be sure that they are equivalent (i.e., difficulty, interestingness, etc.) Future studies should also consider including a pre-test to measure participants' impressions of the tasks before completing them.

The nature of the tasks and the choice between them also limits conclusions that can be drawn from the study. These tasks were easy and simple, which makes them very different from tasks used in other studies (such as very difficult puzzles). For instance, while motivation may have decreased performance for these simple tasks because there was little to be gained from spending more time on the tasks, for tasks that require more time and persistence, increased motivation might indeed link to increased performance (by other measures appropriate for the task).

Another limitation of this study was its medium. As a web survey, participants' facility using the survey software may have influenced some of the outcomes. Though on average random assignment would eliminate this, the sample size in this study was not large enough to account for all possible variation in skill level. Future studies might consider including a training task at the beginning to familiarize users with the software interface.

The small sample size may have contributed to the small effect size throughout the study. A major issue with the design of this study was that it split participants into smaller subgroups in order to compare them (i.e., based on choice/no choice and task order). Future studies could avoid splitting up the sample and issues surrounding differences between tasks by only including one experimental task, and making the initial choice more abstract and deceptive. An alternate solution would be to conduct the study with a larger sample size.

As noted earlier, this study lacks external validity. It was conducted using an unrepresentative convenience sample. The results are not generalizable. The findings are also not likely to be replicated in real-world contexts. The nature of this experiment was very



controlled: there was no human-human contact between researchers and participants, and every participant experienced the same simple tasks. We tried to isolate choice completely, which is not realistic for real-world experiments. Even conducting the same experiment in a lab might influence the results by introducing human-human social contact.

A final, more minor limitation of the study was the way in which it measured motivation, relying on participants' self-reports. This measure may have introduced social-desirability bias. We believe that such bias would be minimal since the experiment was entirely anonymous. Nonetheless, using self-report as a measure of motivation may not have been completely valid.

### **Opportunities for Further Research**

Future research on choice, motivation, and performance could expand on this research in many ways. Taking advantage of the low-cost of this experimental method, researchers could likely collect far more responses for these experimental tasks to get an improved sample size that might show statistically significant effects. More importantly, this experiment in particular allows for very fine grained control over participant's experiences and the independent variable. Further studies could easily vary the difficulty of the task (deliberately), the nature of the tasks, or the nature of the choice (i.e., how meaningful or beneficial it is to the participant) to examine more closely factors that make a choice motivation or not motivating.

Another area for potential research on choice, motivation, and performance would be to consider the role of provision of choices as a negotiation strategy. Essentially, does offering a choice effectively reframe an issue so that the other person is more motivated to compromise?

Returning to the anecdote at the beginning of this paper, a further question to ask would be, “does offering the girl a choice of showering or brushing her teeth reduce the probability that she will refuse to do what is being asked of her?”

## **Significance**

Past research has linked choice to increased motivation and performance. Our results, however, suggest that merely offering a simple choice is not enough to have a significant effect on motivation or performance. We believe that other attributes of a choice situation are likely responsible for the positive link reported in the past.

Our findings have implications for the design of various behavioral or educational interventions involving choice. Our research suggests that interventions involving choice need to be carefully analyzed—choice alone will not change motivation or performance. For instance, would offering a choice of peas or carrots for a vegetable option for school lunch increase the likelihood that children are motivated to eat or do eat vegetables? Our research suggests that the context of the choice would be more likely to change the children’s eating habits than the simple provision of a choice.

Prior research has made it clear that choice can contribute to a positive sense of control that is motivating and performance-enhancing. However, we suggest that despite the face appeal of choices as motivational tools, the context of those choices is highly significant.

## References

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## Tables/Figures

**Figure 1: Responses**

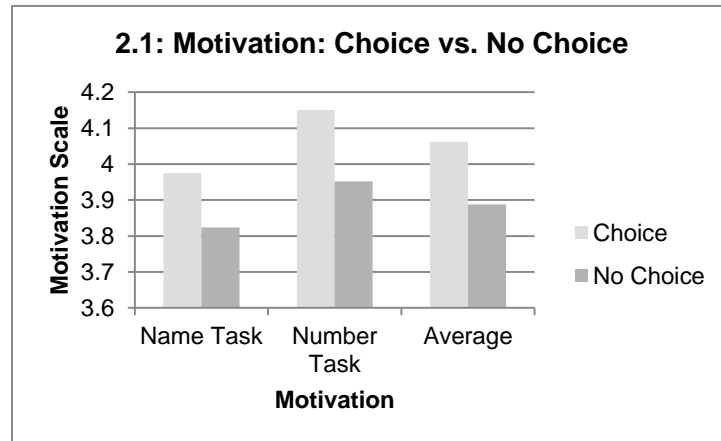
	Choice	No Choice	All
<b>Name Task First</b>	16	12	<b>28</b>
<b>Number Task First</b>	8	13	<b>21</b>
<b>Total</b>	<b>24</b>	<b>25</b>	<b>49</b>

Of the 49 participants, 24 were randomly assigned to the experimental choice condition while 25 were in the control no-choice condition. Twenty-eight of the participants did the name task first while 21

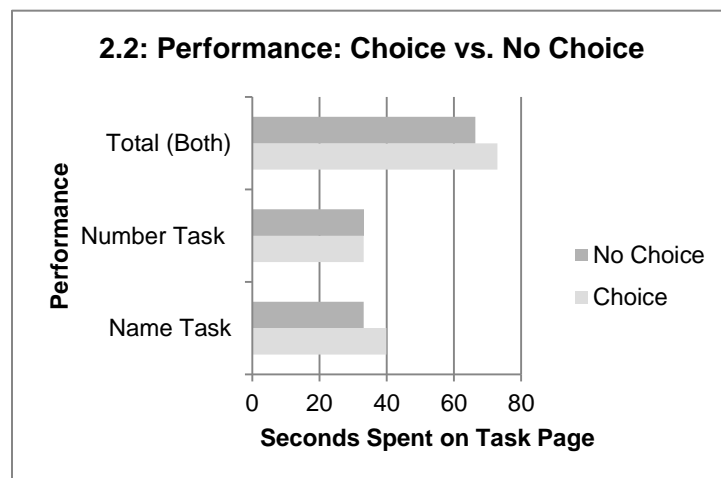
participants did the number task first. Participants in the choice condition had a strong tendency to choose the name task first.

**Figure 2:**

**Overall Trends in Motivation and Performance for Choice and No-Choice Conditions**



Overall, participants in the choice condition had higher average motivation for each task and on average. However, the differences in motivation between the choice and no-choice group were not statistically significant.



Participants in the experimental choice condition overall performed worse than participants in the no-choice condition. They spent more time completing each task and more time total. However, the differences in performance between the two groups were not statistically significant.

**Figure 3: Task Order, Motivation, and Performance**

**Figure 3.1: Motivation and Performance for Participants who Completed Name Task First**

	Choice (N=16)	No Choice (N=12)	Significance (p)
<b>Name Task Motivation</b>	M=4.4500, SD=0.5773	M=4.133, SD=0.6998	0.868
<b>Number Task Motivation</b>	M=4.1626, SD=0.5175	M=3.9500, SD=0.5469	0.380
<b>Name Task Performance (seconds)</b>	M=44.0454, SD=13.4968	M=34.1875, SD=7.3006	0.106
<b>Number Task Performance (seconds)</b>	M=35.3888, SD=13.4799	M=27.3463, SD=4.0690	0.014*

\*  $p < 0.05$

Of participants who completed the name task first, participants in the choice condition had higher motivation and worse performance overall. However, these effects were only statistically significant for the number task performance.

Figure 3.2: Motivation and Performance for Participants who Completed Number Task First

	Choice (N=8)	No Choice (N=13)	Significance (p)
<b>Name Task Motivation</b>	M=3.6, SD=0.3854	M=3.7077, SD=0.6409	0.093
<b>Number Task Motivation</b>	M=3.55, SD=0.5318	M=3.7846, SD=0.7186	0.453
<b>Name Task Performance (seconds)</b>	M=31.502, SD=12.9320	M=32.1263, SD=10.7189	0.853
<b>Number Task Performance (seconds)</b>	M=28.5753, SD=8.2000	M=38.7413, SD=12.7929	0.113

Of participants who completed the number task first, participants in the no choice condition had higher motivation and worse performance overall. However, these effects were not statistically significant.

#### Figure 4: Correlations between Motivation and Performance

Though motivation and performance correlated across tasks, there was not a significant correlation between motivation and performance for either the name task-first or number-task first group.

Figure 4.1: For Participants who Completed Name Task First (N=28)

		Name Task Performance	Number Task Performance	Number Task Motivation	Name Task Motivation
<b>Name Task Performance</b>	Pearson Correlation	1			
	Sig.				
<b>Number Task Performance</b>	Pearson Correlation	.705**	1		
	Sig.	0			
<b>Number Task Motivation</b>	Pearson Correlation	0.039	0.018	1	
	Sig.	0.846	0.929		
<b>Name Task Motivation</b>	Pearson Correlation	0.015	0.028	.864**	1
	Sig.	0.939	0.888	0	

**Figure 4.2: For Participants who Completed Number Task First (N=21)**

		NameTaskPag eSubmit	Number Task Peformance	Number Task Motivation	Name Task Motivation
Name Task Performance	Pearson Correlation	1			
	Sig.				
Number Task Performance	Pearson Correlation	.576**	1		
	Sig.	0.006			
Number Task Motivation	Pearson Correlation	0.404	0.372	1	
	Sig.	0.069	0.097		
Name Task Motivation	Pearson Correlation	0.221	0.266	.889**	1
	Sig.	0.337	0.244	0	

## Appendix

### Codebook

Question	Label	Responses
Name Task Performance	Time that participant takes to submit the page for the name task.	Time in seconds.
Number Task Performance	Time that participant takes to submit the page for the number task.	Time in seconds
Not Full Attention (reverse-coded)	I didn't give this task my full attention.	1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree
Not Accurate (reverse-coded)	I didn't pay too much attention to accuracy in this task	1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree
Could Have Done Faster (reverse-coded)	I could have completed this task faster if I had tried harder.	1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree
Motivated	I was motivated to complete this task.	1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree

		1=Strongly Disagree
		2=Disagree
Did Quick (reverse-coded)	I completed this task as quickly as I could.	3=Neutral
		4=Agree
		5=Strongly Agree

**Note:** Variables are the same for both tasks. Variables have a suffix (i.e., \_NameTask) that identifies which task they apply to.

### Data Matrix

Attached: if needed, you can email me for the excel or spss file at [julialt@gmail.com](mailto:julialt@gmail.com)