Don’t Save the Worst for Last: 
Experienced and Predicted 
Affective Impacts of Task Ordering

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Abstract

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Previous studies across multiple domains (e.g. pain, negative film clips, and learning word lists) have established that the end of an experience is heavily weighted when making summary judgments. However, these studies have not typically involved the type of tasks that individuals complete in everyday life. Moreover, they generally focus on retrospective evaluations of an event rather than its immediate affective impact. We sought to leverage these findings and ask how the order in which people complete hard and easy tasks might have consequences for how they feel after they are finished. To test this, we first ran a pair of between-subjects studies where participants completed one hard and two easy tasks with minimal expectations about the nature and length of the experience. We systematically varied whether the hard task occurred first, second, or third in the sequence and measured affect before and after the set of tasks. Consistent with predictions generated from these prior studies, those who completed the most difficult task at the end of a sequence had a greater drop in affect than those who completed it earlier. Also, final task affect was significantly predicted by the difficulty and enjoyment of the final task in the sequences. Related to this, the affective experience of the tasks in isolation was very similar to sequences that end on those same tasks. Taken together, these findings suggest an end effect in our data.
We next sought to replicate the observed order effects when participants had prior knowledge of how many tasks they would be completing. We saw a very similar pattern in this study as well, with participants who completed the most difficult task at the end of the sequences having the greatest drop in affect. We also replicated our end effects, and observed that knowledge of task number led to greater affect in all orders. Our final studies tried to answer the question of whether or not participants predict that completing the most difficult task at the end of a sequence will lead to worse affect than completing it earlier. Across two studies, we did not find that participants who read about the tasks predicted affective differences as a result of task order. We also did not see evidence of a clear end effect in these participants. However, when compared to those who completed the tasks, we did observe a general overestimation of negative affect across all orders, regardless of hard task position. Although it has not been shown for task sequences, this finding is consistent with literature on ‘affective forecasting,’ which suggests that people overestimate the magnitude of expected negative affect.

Finally, we asked participants in all studies what order they would have preferred to complete the sequences in. The majority of all participants would have preferred to complete the hard task at the end of a sequence rather than earlier. This was despite the affective consequences that many of them experienced from recently completing it at the end of a sequence. However, those in the prediction groups who merely had the hardest task presented to them first showed a disproportionate preference to also complete it first. And those who only completed a single task would prefer to complete it first in a hypothetical sequence with two easy but unknown tasks. Thus,
despite the affective consequences of task order, many people do not seem to select orders that may diminish negative affect following a sequence. However, these data also suggest that completing easy tasks at the end of a sequence can improve affect, and there may be scenarios where individuals make more adaptive choices.
Table of Contents

List of Tables  
List of Figures  
Acknowledgments  
Dedication  
General Introduction  
Chapter 1  
  Introduction  
  Methods  
  Results – Study 1a  
  Results – Study 1b  
  Summary – Studies 1a and 1b  
Chapter 2  
  Part 1  
    Introduction – Study 2a  
    Methods – Study 2a  
    Results – Study 2a  
    Summary – Study 2a  
  Part 2  
    Introduction – Study 2b  
    Methods – Study 2b  
    Results – Study 2b  
    Summary – Study 2b  
Chapter 3  
  Introduction – Studies 3a and 3b  
  Methods – Studies 3a and 3b  
  Results – Study 3a  
  Results – Study 3b  
  Summary – Studies 3a and 3b  
General Discussion  
  Overall Summary  
  Limitations and Future Directions  
  Implications  
References
List of Tables

Table 1.1. Summary of all tasks participants completed.................................................11
Table 1.2. Summary of post-task questions in all studies .............................................14
Table 1.3. Study 1a - Multiple regressions predicting final affect with individual task ratings and initial affect.................................................................18
Table 1.4. Study 1a - Global ratings by hard task position ...........................................20
Table 1.5. Study 1b - Multiple regressions predicting final affect with individual task ratings and initial affect.................................................................22
Table 1.6. Study 1b - Global ratings by hard task position ...........................................24
Table 2.1. Study 2b - Multiple regressions predicting final affect with individual task ratings and initial affect.................................................................44
Table 2.2. Study 2b vs. 1a - Task 3 ratings by group ....................................................45
Table 2.3. Study 2b vs. 1a - Global ratings by group ....................................................46
Table 3.1. Study 3a - Multiple regressions predicting final affect with individual task ratings and initial affect.................................................................57
Table 3.2. Study 3a vs. 1a - Global ratings by group ....................................................59
Table 3.3. Study 3b - Multiple regressions predicting final affect with individual task ratings and initial affect.................................................................62
Table 3.4. Study 3b vs. 1b - Global ratings by group ....................................................64
List of Figures

Figure 1.1. Study 1a - Total affect change by hard task position 17
Figure 1.2. Study 1a - Order preferences 19
Figure 1.3. Study 1b - Total affect change by hard task position 21
Figure 1.4. Study 1b - Order preferences 23
Figure 2.1. Study 2a - Manipulation Check - Expectations of task number 31
Figure 2.2. Study 2a - Total affect change by task in isolation 32
Figure 2.3. Study 2a - Total affect change by single task and sequences. 33
Figure 2.4. Study 2a - Order preferences 35
Figure 2.5. Study 2b - Manipulation Check - Expectations of task number 42
Figure 2.6. Study 2b - Total affect change by hard task position 43
Figure 2.7. Study 2b vs. 1a - Total affect change by hard task position and group 45
Figure 2.8. Study 2b - Order preferences 47
Figure 3.1. Study 3a - Total expected affect change by hard task position 56
Figure 3.2. Study 3a vs. 1a - Total affect change by hard task position and group 58
Figure 3.3. Study 3a - Order preferences 60
Figure 3.4. Study 3b vs. 1b - Total affect change by hard task position and group 61
Figure 3.5. Study 3b - Total affect change by hard task position 63
Figure 3.6. Study 3b - Order preferences 65
Figure 4.1. Hypothetical sequences of affect change. 75
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Dedication

To truth and whiskey. Even when they burn.
General Introduction

“If your job is to eat a frog, eat it first thing in the morning. If your job is to eat two frogs, eat the big one first.” – Mark Twain.

In daily life, there are many tasks that we must complete. Many of these are fairly simple and straightforward, such as calling in a prescription or going to the store to pick up milk. Others may be more difficult and undesirable, such as washing a stack of greasy dishes following a dinner party. Some people may wash the dishes first and then coast through the other tasks, while others may leave the dishes for the end. If these could conceivably be completed in any order, will people feel better than they started, worse, or the same depending on when they tackle the hardest task? Said another way, is affect differentially altered based on when someone completes the least desirable task in a sequence? If so, do particular task positions have a disproportionate impact on people’s affective experience? And are people making choices that will improve how they feel when they are finished with the tasks?

Perhaps the most relevant body of literature pertaining to experienced order lies in research known as ‘the peak-end rule.’ This is based on the seminal work of Fredrickson and Kahneman (1993), who used positive and negative film clips to demonstrate that retrospective judgments of an experience are largely determined by a few snapshots (the peak and final moments) rather than an average of the entire event or sequence. When this happens, information about the sequence gets
discarded in favor of several key time points, a process known as ‘duration neglect.’

Ariely (1998) found similar results when delivering painful heat and pressure to his participants, and this pattern was also found for the negative experience of keeping one’s hand in a bucket of very cold water (Kahneman et al., 1993). Here, participants actually preferred an added period of unpleasantness at the end of a session, so long as the end was relatively less unpleasant (in this case, a slightly warmer, but still very cold bucket). Thus, the end was improved, which improved the overall experience and led participants to prefer the extended session. Relatedly, those who had a short (and merely less painful) portion added to the end of an otherwise unpleasant medical procedure rated the experience as less bad and were more likely to get a follow-up 5 years later (Redelmeier et al., 2003).

Outside of negative experiences, Do et al. (2008) found that receiving a low value material item after receiving a more valued item decreased the value of the experience, even though the overall utility should in theory be greater. Interestingly, Rode, Rozin, and Durlach (2007) did not observe peak or end effects in the domain of food, though they did find evidence of duration neglect. However, there is also research showing that the end of an exercise session predicts global evaluations (Hargreaves & Stych, 2012) and that adding lower effort words to the end of a hard list made participants prefer it to a shorter list with only hard words (Finn, 2010; Hoogerheide & Paas, 2012). This period at the end is considered valuable because it conveys that a judgment can be made with certainty and without risk of further surprises (Fredickson, 2000). This also has important implications for future
behavior, as experiences that are rated more positively are more likely to be repeated, while those that are more negative are not.

However, while these studies have made important contributions to the field of psychology, very few of these studies touch upon the types of tasks that are common in everyday life. The closest to this probably comes from the studies of word lists by Finn (2010) and Hoogerheide and Paas (2012). In the study by Finn, participants learned word lists that were unpleasantly effortful, and the dependent variable was ratings of discomfort. Similarly, Hoogerheide and Paas had their participants perform unpleasant learning of high cognitive load word lists and measured pleasantness (or lack thereof). In both studies, ending on a better list, even if it meant more effort, led to a better experience overall. As with these studies, Garbarino and Edell (1997) also found a connection between difficult tasks and negative affect. In their study, participants had to choose different brands, and those that required more mental effort to evaluate led to more negative affect and were chosen less.

Rather than focus on the overall experience, we primarily wanted to explore the immediate affective impact that may result from having an undesirable experience. As such, our paradigm included a sequence of hard and easy tasks. We systematically varied when the hard task occurs, and we predicted that when the hard task (peak negative experience) lined up with the end, participants in this group would feel worse than those who completed the hard task earlier.
When faced with decisions about competing goals, what factors typically shape behavior? There are a variety of dimensions that people often consider, and many of them have been investigated in studies examining multiple goal pursuit. For example, individuals may choose to work on a particular task based on their current proximity to the goal (Louro, Pieters, & Zeelenberg, 2007; Vancouver, Weinhardt, & Schmidt, 2010), because they expect to feel positively for achieving it (Nelissen, de Vet, & Zeelenberg, 2011), or because they have prioritized it as something valuable even in a laboratory task (Vogt, De Houwer, & Crombez, 2011). While goal progress is itself a desirable outcome, an added benefit may be that individuals can then pivot towards (Fishbach & Dhar, 2005) or prepare for other goals if they expect to be able to achieve more than one (Clarke & Hunt, 2016). To the extent that they are successful in achieving multiple goals, this may also lead to greater feelings of self-efficacy (McKee & Ntoumanis, 2014).

However, individuals who do not expect to complete all of their goals may decide to disengage from a particular goal and pursue other goals that are more attainable (Schmidt & Dolis, 2009). A longitudinal study of goal disengagement found evidence that this may be beneficial, with those who correctly disengaged from unattainable goals showing gains in well-being by more properly allocating their efforts (Wrosch et al., 2003). Individuals may also decide to lower their goal standards due to poor performance (Carver & Scheier, 1982; Carver & Scheier, 1990) or in times of stress (Hockey, 1997). Conversely, they may even inadvertently give more effort than is required for an easy task in anticipation of a future difficult one (Bosman, Pieters, & Baumgartner, 2010).
In addition to the above factors, previous research has shown that gains in well-being have unsurprisingly been found to track with success in domains that one finds valuable (Sheldon & Elliott, 1999; Oishi et al., 1999) or that fit an individual’s psychological needs (Sheldon & Kasser, 1998). However, these longitudinal studies suggest that success in goal completion does not necessarily yield equal gains across all areas of one’s life.

Given all of the above, we were careful to design our studies to control as many of these factors as possible across the various orders. Participants all completed the exact same tasks and had no expectation about what type of task was coming next. They also had no reason to believe that any task was more valuable or attainable than the others, so as to not bias their commitment and attention to one of the tasks over another. Additionally, all tasks were completed in a linear fashion to preserve the manipulated orders.

Studies 1a and 1b began to probe this question of affective impacts from daily task order by having participants sequentially complete one hard and two easy tasks with no expectation about task content or number. We systematically varied the position of the hard task, and participants rated their affect before and after the sequences. These two studies were identical, with the exception that study 1a employed a more difficult hard task than study 1b and included minor modifications to one of the easy tasks. Across both studies, our results showed that those who completed the hard task at the end of the sequences had a greater decrease in affect than those who completed it in other positions.
To better interpret these results, we ran two follow-up studies. In the first of these, Study 2a, participants made affect ratings immediately before and after performing a single task from either Study 1a or 1b. This was done to capture the unique affective impact of our tasks and to better understand how participants were likely feeling at different moments throughout the sequences. In Study 2b, we explicitly informed participants before they began that they would be completing three tasks. This was to rule out the alternative explanation that our results from studies 1a and 1b were due solely to lack of knowledge about having completed the task sequence. Additionally, it allowed us to determine if there was an affective benefit to having this knowledge.

We were also interested in whether or not participants would predict a difference in affect based on task ordering. To test this, we had participants in studies 3a and 3b rate their current affect, read through a description of the tasks, and ultimately rate how they expected to feel after performing those tasks. We were careful to word this task in such a way as to keep it ambiguous whether or not they would actually be performing any tasks during their session.

In addition to experienced and predicted affect change, we had participants rate the experience of the tasks themselves, the order in which they preferred to complete the sequence, and their desire to be in a similar study in the future. Finally, we collected global ratings of the experience and individual difference measures such as participants’ Grit (Duckworth & Quinn, 2009) or Locomotion scores (from the Regulatory Mode Questionnaire; Kruglanski et al., 2000). While the main task-
related variable we were interested in was difficulty and its connection to negative affect, we also collected global and individual task ratings of other variables we deemed to be task relevant. These included enjoyment, engagement, accomplishment, and effort.

All of our participants were recruited using Amazon’s Mechanical Turk. Participants on this platform have been found to be more diverse than traditional undergraduate populations (Buhrmester, Kwang, & Gosling, 2011; Casler, Bickel, & Hackett, 2013), as well as equally or more attentive during task performance (Hauser & Schwartz, 2016). Additionally, Berinsky, Huber, and Lenz (2012) were able to replicate classic loss or gain framing studies such as the ‘Asian Disease Problem’ (Tversky & Kahneman, 1981) in a sample of MTurk workers. In our studies, we collected data from approximately 60 participants in each experimental condition. Participants were excluded if they had already completed a previous version of our tasks, failed an attention check, had incomplete or nonsensical answers, or were not between the ages of 18 and 65.
Chapter 1

Introduction

To test the affective impact of hard task position, we designed a between-subjects study where participants completed everyday tasks in different orders. Each participant completed one normatively difficult and two easy tasks in a serial order. We systematically varied whether the hard task occurred first, second, or last in the sequence, counterbalanced the easy tasks, and collected affect ratings before and after the sequence of tasks. Studies 1a and 1b were virtually identical, with study 1b serving as a replication with a relatively less difficult ‘hard’ task.

These studies were designed to control many factors across the various orders. Participants all completed the exact same tasks and had no expectation about what type of task was coming next. They also had no reason to believe that any task was more valuable or attainable than the others. Additionally, the only knowledge they had about session length was that they would perform ‘several tasks’ and that the expected duration of their session was approximately 40 minutes including questionnaires. Thus, any differences we observed were likely to be attributable to the order of the tasks themselves.

The tasks we used were generated with the following considerations: They should be relatively short, be achievable by a random sample of adults, not be done for recreational purposes, and should be suitable for a computerized testing environment. With these criteria in mind, we generated tasks that were either
relatively easy or relatively difficult (see Chapter 1 Methods for task details and norming).

In keeping with the literature, we hypothesized that we would observe an end effect, with participants who completed the most difficult task in the final position showing a greater decrease in affect than those who completed it earlier. We also collected ratings of the individual tasks, participants’ desire to be in a future study, their preferred order to complete the sequence, and global ratings of the sequence. We predicted that ratings of final affect should be related to the experience of the final task and that affect change should be related to the desire to be in a similar study. In terms of order preferences, participants might choose a better affective experience by completing the difficult task early in the sequence. Alternatively, they may leave this until the end, regardless of the consequences, as in procrastination (Klingsieck, 2013). Finally, we were unsure if global ratings of variables such as enjoyment and difficulty would show clear differences across orders and collected these variables on an exploratory basis.

Methods

Task Norming

Prior to beginning our main experiments, we sought to verify that the tasks we created were distinctly easy or difficult. To do so, we recruited a sample of 60 participants via Amazon's Mechanical Turk (MTurk; www.mturk.com) to provide normative ratings for five different tasks under consideration for our studies. 7 participants were excluded for failing to complete one of the hard tasks, leaving 53
individuals in our norming sample (26 female, mean age = 31.83, SD = 9.07).

Participants in this sample completed five tasks in counterbalanced orders. These included making a grocery list of items to stock a new kitchen, making a to-do list and ranking the items by length, listing step-by-step directions to frequently visited places, and a task to brainstorm uses for a dining table. We also collected normative ratings for an additional task that was not included in our main studies.

We ran a repeated-measures ANOVA and found that ratings of difficulty were significantly different across the four main tasks (F(3) = 79.789, p < 0.001). Post-hoc Bonferroni-corrected t-tests showed that the dining table task (mean difficulty = 7.38, SD = 1.98) and direction list task (mean = 6.04, SD = 2.25) were rated as significantly more difficult than the grocery list (mean = 2.85, SD = 1.95) and to-do list tasks (mean = 3.47, SD = 1.83); p (difference) < 0.001 for both sets of comparisons). Additionally, the dining table task was also rated as more difficult than the directions list task (p = 0.001), and there was no difference between the grocery list and to-do list tasks in terms of mean difficulty (p > 0.30). This norming study was able to narrow down our tasks into two that were normatively easy (grocery list and to-do list) and two that were relatively more difficult (directions list and dining table).

We also had difficulty ratings for an additional task from a smaller norming study we had run previously. In the prior sample, 24 participants from MTurk (12 female, mean age = 34.33, SD = 10.88) completed several of the same tasks as the larger study, including one where they were instructed to list items they planned to
purchase and rank them by need. The mean difficulty rating for this task was 2.71 (SD = 1.40), which was very much in line with the grocery and to-do list tasks. As such, we included this among the ‘easy’ tasks in our main study (a full description of task and instructions is in table 1.1 below).

<table>
<thead>
<tr>
<th>Task</th>
<th>Main Instructions</th>
<th>Other Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grocery List</td>
<td>Imagine that you have just moved into a new home and list 20 items to stock the kitchen.</td>
<td>Encouraged to make answers distinct and avoid duplicate items (e.g. listing multiple bananas).</td>
</tr>
<tr>
<td>Mean Difficulty Rating: 2.85 (SD = 1.95)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To-Do List</td>
<td>List 10 items on your to-do list in any order.</td>
<td>On the next screen, items are ranked by how long they will take to complete.</td>
</tr>
<tr>
<td>Mean Difficulty Rating: 3.47 (SD = 1.83)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase List</td>
<td>List 12 items you need to purchase in any order.</td>
<td>On the next screen, items are ranked by need.</td>
</tr>
<tr>
<td>Mean Difficulty Rating: 2.71 (SD = 1.40)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directions List</td>
<td>Provide step-by-step directions to 5 places you go frequently.</td>
<td>Locations must have at least 3 directions each. Encouraged to list as ‘M’ or ‘##’ street to protect privacy.</td>
</tr>
<tr>
<td>Mean Difficulty Rating: 6.04 (SD = 2.25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dining Table</td>
<td>List 20 uses for a dining table.</td>
<td>Uses can be non-traditional and should be as distinct as possible.</td>
</tr>
<tr>
<td>Mean Difficulty Rating: 7.38 (SD = 1.98)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1.1. Summary of all tasks and instructions used in our studies. Mean ratings and standard deviations of difficulty are listed for each task.

Participants

In study 1a, 179 participants were recruited via Amazon’s Mechanical Turk to complete a sequence of three tasks on Qualtrics. They were randomly assigned to one of three groups of approximately 60 participants each, based on the experimental manipulation of hard task position within a sequence. 20 participants were excluded for the following reasons: 12 for completing a prior version of our
task, 6 for incomplete answers, and 2 for exceeding the age limit. This left a total of 159 participants (66 female; mean age = 32.62, SD = 9.47; mean years of education = 14.92, SD = 1.75). Our final sample included 52 participants who completed the hard task first, 51 who completed it in the second position, and 56 who completed it in the third position.

In study 1b, 180 participants were recruited to complete a similar sequence of three tasks on Qualtrics. Again, approximately 60 participants were randomly assigned to each of three different groups based on the temporal position of the hard task. 5 participants were excluded for the following reasons: 2 who informed us they were using the internet to generate their answers, 2 for incomplete answers, and 1 who informed us that s/he was working on a different task simultaneously. 175 participants remained after exclusions (88 female; mean age = 33.87, SD = 10.22; mean years of education = 15.29, SD = 1.74). This resulted in a final n of 60 who completed the hard task first, 56 who completed it in the second position, and 59 who completed it in the third position.

**Experimental Procedures**

Participants in both studies were recruited via MTurk for a study advertising that it involves ‘performing several everyday tasks.’ Participants were between 18 and 65 years old and fluent in English. They were told that the sessions would last approximately 40 minutes and involve a combination of tasks, questionnaires, and demographic information. Participants in both studies provided informed consent in
accordance with the Columbia University Institutional Review Board, and they were paid at a rate of $4.00 for the session (approximately $6/hour).

After giving consent, participants made an initial rating of their positive and negative affect on a 1 – 9 Likert scale. Each participant then completed three tasks in a serial order, with two normed to be easy and one normed to be relatively more difficult. We systematically varied whether the most difficult task occurred first, second, or last in the sequence (orders will sometimes be abbreviated by E's and H's, such as EEH for ‘easy-easy-hard’). Participants in study 1a completed the grocery list task, the to-do list task, and the dining table task. Those in study 1b completed the grocery list task, the purchase list task, and the directions task (see table 1.1 for more details).

Immediately after completing the sequence of tasks, participants again rated their positive and negative affect. Following this, they completed a block of randomized questions that included rating their global levels of enjoyment, engagement, difficulty, accomplishment, and effort on a 1 – 9 Likert scale. This block also included ratings of their desire to be in a similar experiment, and their preferred order for completing the tasks (see table 1.2 for example questions and scale items).

<table>
<thead>
<tr>
<th>Rating</th>
<th>Question</th>
<th>Scale Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affect</td>
<td>“How positive (negative) do you feel right now?”</td>
<td>1 – Not at all positive/negative; 3 – Somewhat positive/negative; 5 – Moderately positive/negative; 7 – Very positive/negative; 9 – Extremely positive/negative</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>“How much did you enjoy this/these tasks?”</td>
<td>1 – Not at all; 3 – Somewhat; 5 – Moderately; 7 – Very much 9 – A great deal</td>
</tr>
<tr>
<td>Task Type</td>
<td>Question</td>
<td>Rating Options</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Difficulty</td>
<td>&quot;How difficult did you find this/these tasks?&quot;</td>
<td>1 – Very easy; 3 – Somewhat easy; 5 – Neither easy nor difficult; 7 – Somewhat difficult; 9 – Very difficult</td>
</tr>
<tr>
<td>Engagement</td>
<td>“How engaging did you find this/these tasks”</td>
<td>1 - Not at all engaging; 3 - Somewhat engaging; 5 - Moderately engaging; 7 - Very engaging; 9 - A great deal</td>
</tr>
<tr>
<td>Accomplishment</td>
<td>“How accomplished do you feel for finishing this/these tasks?”</td>
<td>1 – Not at all; 3 – A little; 5 – Moderately; 7 – A fair amount; 9 – Very much so</td>
</tr>
<tr>
<td>Effort</td>
<td>“How much effort did you need to put in to complete this/these task?”</td>
<td>1 – Very little; 3 – A small amount; 5 – A moderate amount; 7 – A lot; 9 – A great deal</td>
</tr>
<tr>
<td>Future Study</td>
<td>Would you have any desire to participate in another similar experiment?</td>
<td>1 - Definitely dislike to participate; 3- Moderately dislike to participate; 5 – Neutral; 7 - Moderately like to participate; 9 - Definitely like to participate</td>
</tr>
<tr>
<td>Order Preference</td>
<td>Please drag the tasks to the box on the right and arrange them in the order you would have preferred to complete them in.</td>
<td>Tasks were arranged in order they were completed or described and they could rearrange them in their preferred order.</td>
</tr>
</tbody>
</table>

Table 1.2. Participants rated their affect (with positive or negative rated separately). They also rated properties of the tasks on an individual (‘this task’) or global basis (‘these tasks’), their desire to be in a future study, and the order they would have preferred to complete the tasks in. These questions were used in studies 1a, 1b, 2a, 2b, 3a, and 3b. These were virtually identical in all studies with the following exceptions: In study 2a, they were asked if they preferred to complete the task they just performed first, second, or third in a hypothetical sequence with two other tasks. In study 3a and 3b, questions were worded to ask about expectations, such as “how much do you think you will enjoy this/these tasks?”

Next, participants rated the individual tasks on the dimensions of enjoyment, engagement, difficulty, accomplishment, and effort. Questions were blocked by task and presented in the same order as the tasks themselves. Within each block, the
questions were randomized (e.g. a randomized block of questions about the grocery task followed by one about the to-do list task and dining table task). Finally, they completed the 8-item Grit Scale and Regulatory Mode Questionnaire, provided demographic information, and were debriefed. Aside from the tasks themselves, all other elements of studies 1a and 1b were identical.

Analysis

Behavioral analyses were run using SPSS version 23 for all experiments. Given that the ratings of positive and negative affect essentially mirrored each other, we created a composite score to use for initial affect, final affect, and total affect change. This was done by subtracting negative affect from positive affect. Thus, if a participant rated their initial positive affect to be 5 and their negative affect to be 3, this would yield a score of +2. If their ratings after the sequence were then 3 for positive affect and a 5 for negative affect, their final affect score would be -2. We would ultimately code total affect change as -4 for this participant. We then ran 1X3 ANOVA’s to test for differences in initial affect, affect change, and global ratings using the position of the hard task as a between-subjects factor. When ANOVA’s yielded significant results, we ran follow-up Bonferonni-corrected t-tests to assess differences. Multiple linear regressions were run to test which task position was most associated with affect ratings after the sequences. Final affect was the outcome variable, with task 1, 2, and 3 behavioral ratings (enjoyment, difficulty, etc…), as well as initial affect, as predictors.
Linear regressions were run between affect change and the desire to be in a future similar study. They were also run between affect change and global ratings of the experience when significant differences were present between orders. Additionally, chi-square tests of independence were run to assess whether or not the proportion of participants who preferred to complete the hard tasks in different positions varied by when they completed it within a sequence. The majority of these tests were run for both study 1a and 1b, with the only differences occurring when follow-up tests were unnecessary.

**Results – Study 1a**

Before testing for differences in affect change, we wanted to verify that participants across the different conditions were in a similar affective state. Mean initial affect was 3.88 (SD = 3.57) for the HEE order, 4.02 (SD = 2.78) in the EHE order, and 4.36 (SD = 2.94) for the EEH order. A 1X3 ANOVA showed that there was no difference between these groups (F(2,156) = 0.332, p > 0.70).

We were primarily interested in whether or not hard task position would lead to a difference in affect change across the orders (see figure 1.1). A 1X3 ANOVA revealed a difference across orders (F(2,156) = 4.915, p = 0.009), and post-hoc Bonferroni-corrected t-tests showed that those who completed the hard task last had the greatest drop in total affect (mean total affect = -1.82, SD = 3.36). This was significantly greater than those who completed it first (mean total affect = -0.52, SD = 2.64, p (difference) = 0.049) or second (mean total affect = -0.25, SD = 2.16, p (difference)= 0.013).
Figure 1.1. Total affect change by when participants completed the most difficult task (first, second, or third). * = p < 0.05; error bars = +/- 1 SEM.

There was not a significant difference between the affect changes for those who completed the hard task either first or second (p > 0.90). It is worth noting that for this and other comparisons where the variance was non-homogenous (in this case, F = 4.66, p = 0.011 in Levene’s test), we ran non-parametric tests. However, results from parametric and non-parametric tests were very similar, and the non-parametric statistics are not reported.

We next wanted to see whether or not the experience of the final task had a disproportionate bearing on final affect. We ran a multiple regression with behavioral ratings from task 1, 2, 3, and initial affect predicting final affect. This test was run for ratings of enjoyment, difficulty, engagement, accomplishment, and effort (see table 1.3). In all conditions, total initial affect was a significant predictor of final affect (all β’s > 0.60, all p’s < 0.001). Additionally, we found that task 3 enjoyment (β = 0.20, p = 0.002) and difficulty (β = -0.17, p = 0.005) were also significant.
predictors of final affect. In both cases, task 1 and 2 enjoyment or difficulty did not show a significant relationship with final affect. Similarly, task 3 effort ($\beta = -0.10, p = 0.095$) was a trend level predictor of final affect, while task 1 and 2 effort were not predictive. Finally, task 1 engagement ($\beta = 0.15, p = 0.031$) and accomplishment ($\beta = 0.14, p = 0.044$) were significant predictors of final affect, while task 2 and 3 engagement and accomplishment were not.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Enjoyment $\beta$ (p)</th>
<th>Difficulty $\beta$ (p)</th>
<th>Engagement $\beta$ (p)</th>
<th>Accomplishment $\beta$ (p)</th>
<th>Effort $\beta$ (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1 Rating</td>
<td>.015 (.80)</td>
<td>.035 (.50)</td>
<td>.147 (.031*)</td>
<td>.142 (.044*)</td>
<td>.060 (.30)</td>
</tr>
<tr>
<td>Task 2 Rating</td>
<td>-.017 (.70)</td>
<td>.044 (.40)</td>
<td>-.076 (.20)</td>
<td>-.085 (.20)</td>
<td>.074 (.20)</td>
</tr>
<tr>
<td>Task 3 Rating</td>
<td>.200 (.002**)</td>
<td>-.166 (.005**)</td>
<td>.068 (.30)</td>
<td>.114 (.110)</td>
<td>-.103 (.095†)</td>
</tr>
<tr>
<td>Initial Affect</td>
<td>.654 (.001***)</td>
<td>.689 (.001***</td>
<td>.655 (.001***</td>
<td>.645 (.001***</td>
<td>.667 (.001***</td>
</tr>
</tbody>
</table>

Table 1.3. Multiple regressions using initial affect and task ratings of enjoyment, difficulty, engagement, accomplishment, and effort to predict final affect. Each column shows a separate analysis, with the first three rows representing task 1, 2, and 3 ratings of the variable at the top of the column and the final representing initial affect. Each data box contains a beta (top row) and p-value (bottom row) for that variable in the regression.

We then wanted to verify that our dependent variable of affect change was correlated with future behavior, and a linear regression found that there was a significant positive relationship between these variables ($r = 0.25, p = 0.002$). We also tested for differences across orders for when participants would prefer to complete the hard task in a future sequence (figure 1.2). In all groups, the majority of participants would have preferred to complete the hard task in the third and final position in the future (ranging from 55.4 to 58.8%). A smaller percentage of
participants wanted to complete the hard task either first or second, and this proportion did not differ based on when they completed the hardest task ($\chi^2(4, n = 159) = 3.43, p > 0.40$).

Figure 1.2. Participants were asked to list their preferred order for completing the tasks. Bars represent the percentage of responses for task position when participants wanted to complete the most difficult task (beginning, middle, or end of a sequence). These results are separated by when they experienced the hard task (HEE = hard task first, EHE = second, and EEH = third).

Finally, we wanted to test whether the global experience of the sequences was different based on when participants completed the hardest task (table 1.4). We ran a 1X3 ANOVA for the global ratings of enjoyment, difficulty, engagement, accomplishment, and effort. In all cases, we did not observe a significant difference between conditions (all $p$'s > 0.15). Additionally, we added grit, locomotion, and total task time as covariates in 1X3 ANCOVA's predicting affect change and did not find a moderating effect of any of these variables (all $p$'s > 0.30). Due to a coding error, participants in the dining table task who exceeded 15 minutes had their task
timing incorrectly stop at 15 minutes. When these participants were excluded, total task time continued to not have a significant moderating effect. Finally, these variables did not show a significant interaction with affect change in any of our studies, and will not be reported in each chapter.

<table>
<thead>
<tr>
<th>Global Rating</th>
<th>HEE Mean (SD)</th>
<th>EHE Mean (SD)</th>
<th>EEH Mean (SD)</th>
<th>F-value (df = 2,156)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gl. Enjoyment</td>
<td>4.13 (1.90)</td>
<td>4.59 (1.92)</td>
<td>4.20 (2.38)</td>
<td>0.719</td>
<td>&gt; 0.40</td>
</tr>
<tr>
<td>Gl. Difficulty</td>
<td>5.17 (2.33)</td>
<td>5.63 (1.90)</td>
<td>5.93 (2.11)</td>
<td>1.722</td>
<td>0.182</td>
</tr>
<tr>
<td>Gl. Engagement</td>
<td>6.10 (2.14)</td>
<td>6.16 (2.08)</td>
<td>6.25 (2.06)</td>
<td>0.074</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td>Gl. Accompl.</td>
<td>5.21 (2.40)</td>
<td>5.75 (2.31)</td>
<td>5.25 (2.72)</td>
<td>0.742</td>
<td>&gt; 0.40</td>
</tr>
<tr>
<td>Gl. Effort</td>
<td>7.19 (1.55)</td>
<td>7.08 (1.74)</td>
<td>7.14 (1.64)</td>
<td>0.062</td>
<td>&gt; 0.90</td>
</tr>
</tbody>
</table>

Table 1.4. Mean ratings of global enjoyment, difficulty, engagement, accomplishment, and effort for the three different orders (HEE = hard task first, EHE = hard task second, and EEH = hard task second). For each variable, we performed a 1X3 ANOVA (df = 2,156), with F and p-values listed.

Results – Study 1b

As in study 1a, we wanted to confirm that participants across the different conditions were in a similar affective state at the beginning of the experimental session. Mean initial affect was 4.52 (SD = 3.07) for the HEE order, 4.02 (SD = 3.80) in the EHE order, and 3.49 (SD = 3.30) for the EEH order. A 1X3 ANOVA showed that there was not a significant difference between these groups (F(2,172) = 1.358, p > 0.20).

We also wanted to test whether or not we replicated the main affective change differences we observed in study 1a. Again, a 1X3 ANOVA revealed that there was a difference between the orders ((F(2,172) = 3.648, p = 0.028; figure 1.3). Post-hoc Bonferroni corrected t-tests found that those who completed the hard task in the first position (mean affect change = -0.97, SD = 3.17) had a significantly greater
change in affect than those who completed it in the last position (mean affect change = 0.14, SD = 2.56, p (difference) = 0.049). The hard task last order also produced greater affect change than the hard task first order (mean = 0.22, SD = 2.15), although this was only at a trend level (p = 0.080). Again, affect change for those who completed the hardest task first or second was not different (p > 0.90).

Figure 1.3. Total affect change by when participants completed the most difficult task (first, second, or third). * = p < 0.05; † = .05 < p < 0.10; error bars = +/- 1 SEM.

Given the similarity in affective change across orders, we expected to again observe that the final task would have a large bearing on ratings of final affect. We ran an identical multiple regression as before, with initial affect and task 1, 2, and 3 behavioral ratings predicting final affect (see table 1.5). As in the first study, initial affect was significantly related to final affect in all analyses (all β's > 0.50, all p's < 0.001). Similarly, we found that task 3 ratings of enjoyment (β = 0.34, p < 0.001) and difficulty (β = -0.21, p < 0.001) had a significant relationship with final affect. Contrary to study 1a, we also found that task 3 ratings of engagement (β = 0.14, p =
0.034) and accomplishment (β = 0.23, p = 0.003) also predicted final affect, while task 3 effort did not (β = -0.04, p > 0.60). Also contrary to study 1a, we did not find significant correlations between final affect and ratings from task 1 or 2 on any measure (all β’s < |1|, all p’s > 0.10).

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Enjoyment β (p)</th>
<th>Difficulty β (p)</th>
<th>Engagement β (p)</th>
<th>Accomplishment β (p)</th>
<th>Effort β (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1 Rating</td>
<td>.068 (.170)</td>
<td>.028 (&gt;0.50)</td>
<td>.057 (&gt;0.30)</td>
<td>.031 (&gt;0.60)</td>
<td>-.006 (&gt;0.90)</td>
</tr>
<tr>
<td>Task 2 Rating</td>
<td>.075 (.106)</td>
<td>.007 (&gt;0.80)</td>
<td>.060 (&gt;0.30)</td>
<td>.088 (&gt;0.20)</td>
<td>-.004 (&gt;0.90)</td>
</tr>
<tr>
<td>Task 3 Rating</td>
<td>.338 (&lt;.001***)</td>
<td>-.213 (&lt;.001***)</td>
<td>.137 (.034*)</td>
<td>.233 (.003**)</td>
<td>-.035 (&gt;0.60)</td>
</tr>
<tr>
<td>Initial Affect</td>
<td>.595 (&lt;.001***)</td>
<td>.707 (&lt;.001***)</td>
<td>.686 (&lt;0.001***)</td>
<td>.632 (&lt;0.001***)</td>
<td>.740 (&lt;0.001***)</td>
</tr>
</tbody>
</table>

Table 1.5. Multiple regressions predicting final affect using initial affect and task ratings of enjoyment, difficulty, engagement, accomplishment, and effort. Each column shows a separate analysis, with the first three rows representing task 1, 2, and 3 ratings of the variable at the top of the column and the final representing initial affect. Each data box contains a beta (top) and (p-value) for that variable in the regression.

In terms of future behavior, we wanted to replicate our finding that affect change was correlated with the desire to participate in a future study. A linear regression found that these were significantly correlated (r = 0.31, p < 0.001). We also sought to test when in a future sequence participants wanted to complete the hard task (see figure 1.4). Roughly half of participants in all groups (range 45.0 – 59.3%) wanted to complete the hard task at the end of a sequence, with a smaller percentage wanting to complete it first or second. However, this did not differ based on the order participants completed the tasks. (χ²(4, n = 175) = 3.98, p > 0.40).
Participants were asked to list their preferred order for completing the tasks. Bars represent the percentage of responses for task position when participants wanted to complete the most difficult task (beginning, middle, or end of a sequence). These results are separated by when they experienced the hard task (HEE = first, EHE = second, and EEH = third).

Finally, although there were no differences in study 1a, we wanted to test if the global experience of completing our three tasks varied based on when the hard task occurred (see table 1.6). A 1X3 ANOVA found a significant difference between the orders for enjoyment (F(2,172) = 10.434, p < 0.001) and accomplishment F(2,172) = 3.155, p = 0.045), a trend level difference for engagement F(2,172) = 2.930, p = 0.056), and no difference for difficulty and effort (F(2,172) < 2.30, p > 0.10 for both variables). A post-hoc Bonferroni corrected test showed that the EEH order was less enjoyable than HEE (p < 0.001) or EHE enjoyment (p = 0.01). Furthermore, it was less engaging than HEE (p = 0.05), as well as trending towards a lesser feeling of accomplishment (p = 0.081). Other comparisons between orders did not show any differences (all p's > 0.10). Given these differences in global ratings, we wanted to test if these were correlated with affect change. In a linear regression, all three
variables showed a significant positive relationship with affect change ($r = 0.29, 0.36, \text{ and } 0.41$ for engagement, accomplishment, and enjoyment, respectively; all $p$’s $< 0.001$).

<table>
<thead>
<tr>
<th>Global Rating</th>
<th>HEE Mean (SD)</th>
<th>EHE Mean (SD)</th>
<th>EEH Mean (SD)</th>
<th>F-value (df = 2,172)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gl. Enjoyment</td>
<td>5.97 (2.19)</td>
<td>5.38 (2.40)</td>
<td>4.15 (2.01)</td>
<td>10.434</td>
<td>&lt;0.001***</td>
</tr>
<tr>
<td>Gl. Difficulty</td>
<td>3.63 (1.97)</td>
<td>4.25 (2.26)</td>
<td>4.41 (2.12)</td>
<td>2.220</td>
<td>0.111</td>
</tr>
<tr>
<td>Gl. Engagement</td>
<td>6.98 (1.96)</td>
<td>6.50 (2.29)</td>
<td>6.05 (2.05)</td>
<td>2.930</td>
<td>0.056†</td>
</tr>
<tr>
<td>Gl. Accompl.</td>
<td>6.57 (2.23)</td>
<td>5.61 (2.64)</td>
<td>5.56 (2.51)</td>
<td>3.155</td>
<td>0.045*</td>
</tr>
<tr>
<td>Gl. Effort</td>
<td>7.22 (1.61)</td>
<td>7.43 (1.71)</td>
<td>7.44 (1.65)</td>
<td>0.342</td>
<td>&gt; 0.70</td>
</tr>
</tbody>
</table>

Table 1.6. Mean ratings of global enjoyment, difficulty, engagement, accomplishment, and effort for the three different orders (HEE = hard task first, EHE = hard task second, and EEH = hard task second). For each variable, we performed a $1 \times 3$ ANOVA (df = 2,172), with F and p-values listed.

**Summary – Studies 1a and 1b**

In studies 1a and 1b, we sought to test if affect change would be different based on the position of the hard task within a sequence also involving two easy tasks. We also aimed to determine if any differences we observed might be the results of an end effect, what implications this might have for the future, and also if there were differences in the global experience across orders.

In study 1a, affect change was significantly greater for those who completed the hard task in the final position as compared to those who completed it earlier. The participants in the EEH condition experienced a downward shift in total affect, while those in the HEE and EHE conditions had very little change in affect. We replicated this pattern in study 1b, although the gap between orders was less pronounced. This was likely due to the fact that the directions task was less difficult than the dining table task from study 1a.
In both cases, final affect was significantly predicted by enjoyment and difficulty of the third task. Not surprisingly, enjoyment showed a positive relationship with final affect, while difficulty showed a negative relationship. Engagement and accomplishment were both predictive of final affect, although the predictive positions differed across studies. Final affect was correlated with task 1 ratings of these variables in the first study and task 3 ratings in the second. Finally, effort was not significantly related to final affect in either study, although task 3 effort showed a trend level correlation in study 1a.

These studies also showed similarities to each other in the domain of future behavior. In both studies, affect change was significantly correlated with the desire to be in a similar study in the future. Despite this, and the observed differences in affect change, a substantial percentage of participants in both studies wanted to save the hardest task until the end. This did not vary by when they completed the most difficult task in the sequence in either study.

Finally, we did not observe any differences in ratings of the global experience in study 1a. In study 1b, participants in the EEH group found it to be less enjoyable than those in the other orders, less engaging than the HEE group, and also trending towards a lesser feeling of accomplishment than the HEE group.

Upon completing these studies, we next ran two follow-up experiments to better interpret our data. Our first question, which will be addressed in chapter 2 part 1 was: What is the unique affective impact of our tasks, and what can this tell us about affect change across the sequences? The second question, addressed in chapter 2
part 2 was: Does prior knowledge about how many tasks one will be completing in a sequence have an impact on affect change?
Chapter 2

Part 1

Introduction – Study 2a

Studies 1a and b used sequences that varied the position of the most difficult task. This was based on the idea that sequences which end on a difficult task should lead to participants having the greatest decrease in mood. The results of these studies were consistent with this idea, and seemed to suggest that the experience of the final task had a strong bearing on feelings after the sequence was over. Those who ended on a difficult task showed a decrease in mood, while those who ended on an easier task did not. This could indicate that the difficult tasks had a uniquely negative impact on affect, while the three different easy tasks had relatively little affective impact.

Given the emphasis on sequences in the first two studies, we chose to measure affect before and after each sequence, rather than after each task. But the question remained of how much affect each task generated on its own. We therefore had participants in study 2a each complete a single task (among the five previously used in studies 1a and 1b) to assess the affective impacts of these tasks in isolation. These results would also be comparable to how participants felt after that same task when it occurred first or last within a sequence. Furthermore, they would help us approximate how the other tasks might have made them feel within a sequence, allowing us to extrapolate how participants may have felt as they progressed through the tasks.
If the affective changes for individual tasks were similar to sequences that end on that same task, it would provide further support for the end effect. In this case, the global change for a sequence would be virtually identical to the local change from the most recent task they performed. We predicted that local and global changes would indeed be similar. As in studies 1a and 1b, we also measured their desire to be in a future study, and we predicted that this would be positively correlated with affect change. Finally, we asked participants when they would want to do the task they just completed in a hypothetical sequence with two other easy tasks. In line with the results of the first two studies, we predicted that participants would want to complete the hard tasks at the end of a sequence and the easy tasks earlier.

**Methods – Study 2a**

*Participants*

309 participants were recruited to complete a single task on Qualtrics among the five we used in studies 1a and 1b (dining table, directions, grocery list, to-do list, purchase list). We recruited approximately 60 participants in each group and 70 in the dining table group. The extra participants in the dining table task were due to long response times or attrition in study 1a. A total of 29 participants were excluded for the following reasons: 11 for not finishing the dining table task within a pre-determined limit of 15 minutes, 11 for completing two of these tasks on the same day, 1 for failing an attention check, 2 for incomplete responses, 1 for taking more than 3 standard deviations longer than other participants on the directions task, and 1 who had internet connectivity issues that interfered with the session. This left us
with a total of 280 participants (141 female; mean age = 34.12, SD = 9.80; mean years of education = 14.96, SD = 1.97). The total number of participants was 57 for the grocery task, 58 for the purchase task, 53 for the to-do task, and 56 for the directions and dining table tasks.

Experimental Procedures

Participants between the ages of 18 and 65 who were fluent in English were recruited on Amazon’s Mechanical Turk to complete a study involving ‘everyday behavior.’ Although the participants did not know which task they would be completing, they were told that the session would last either 15 minutes (for those who were in the grocery list, purchase list, or to-do list groups) or 20 minutes (for those in the directions or dining table groups). Participants in all groups provided informed consent in accordance with the Columbia University Institutional Review Board and were paid at a rate of $1.50 or $2.00, depending on whether the expected duration was 15 or 20 minutes, respectively.

Each participant completed one of the five tasks used in the previous studies. As in studies 1a and 1b, participants rated their positive and negative affect before and after completing the task. They also made ratings of their desire to be in a future study, as well as their preference of when to do the task they just finished in a sequence that also included two hypothetical ‘easy’ tasks. Instructions were crafted to avoid creating any type of explicit expectation about how many tasks participants would be completing. This provided us with data on how people felt at the end of each task without knowing if they will be completing more tasks or not. As such, the
results would be comparable to Studies 1a and 1b. We also clarified that the two-part tasks were part of a cohesive whole to ensure that participants viewed these as a singular experience. Following the task and subsequent ratings, participants provided demographic information, answered a manipulation check on whether or not they expected more tasks, and were debriefed.

Analysis

To analyze these data, we reorganized groups from studies 1a and 1b by which task participants ended on. For example, the ‘to-do list last’ group included those from both an HEE (hard-easy-easy) order and an EHE (easy-hard-easy) order due to the counterbalancing of the easy tasks. The EEH (easy-easy-hard) groups remained the same, as there was only one hard task and was thus not counterbalanced. Finally, the ‘grocery list last’ group included participants from studies 1a and 1b, given that this task occurred in both.

As in study 1a and 1b, positive and negative affect scores were combined to generate a composite score of initial affect, final affect, and affect change. Chi-square tests were run to assess potential differences in expectations and order preferences across the different task groups. We ran a 1X5 ANOVA to test for differences in either initial affect or affect change between the different single task groups. Given that the 1X5 ANOVA detected differences in affect change, Bonferroni-corrected t-tests were run as a follow-up. We next ran between-subjects t-tests to determine if there were significant differences in initial affect between the single task and sequence groups. A 2X5 ANOVA was run to test whether affect change was different
based on task (final or only), group (single task or sequence), and the interaction between task and group. Finally, a linear regression was run between affect change and the desire to be in similar study in the future.

**Results – Study 2a**

We first performed a manipulation check to confirm that our directions were sufficiently ambiguous so as not to give participants an explicit expectation of task number (figure 2.1). Approximately half of all participants expected more tasks, while the other half were either unsure or thought there would not be (ranging from 46.1% in the directions group to 54.1% in the groceries group), and a Chi-square test of independence showed that this proportion did not vary by task ($\chi^2(8, n = 280) = 2.942, p > 0.90$). Given the level of uncertainty, coupled with the lack of explicit directions, we felt that the task number was sufficiently ambiguous.

![Bar Chart: Did you expect there to be more tasks?](image)

**Figure 2.1.** Participants were asked if they expected there to be more tasks and answered yes, no, or not sure.

We then ran a 1X5 ANOVA and confirmed that initial affect did not significantly
differ between our groups (F(4,275) = 1.285, p > 0.20). Initial affect was 3.25 (SD = 3.47) for the grocery task, 3.34 (SD = 3.63) for the purchase task, 4.59 (SD = 3.19) for the to-do list task, 3.54 (SD = 3.72) for the directions task, and 3.80 (SD = 3.41) for the dining task. We next examined the average total affect change for each of the different tasks (figure 2.2). Mean affect change was -1.93 for the dining task (SD = 3.09), -1.14 for the direction list (SD = 3.27), 0.54 for the grocery list (SD = 1.17), 0.19 for the purchase list (SD = 1.62), and -0.34 for the to-do list (SD = 2.51). There was a significant difference between these groups as assessed by a one-way ANOVA (F(4,275) = 10.273, p < 0.001).

![Study 2a: Affect Change by Individual Tasks](image)

Figure 2.2. Mean affect change for all tasks in the single task group. ‘Easy’ tasks are in blue, while ‘hard’ tasks are depicted in red. * = p < 0.05, ** = p < 0.001, *** = p < 0.001; error bars = +/- 1 SEM.

A Bonferroni-corrected post hoc test found that the dining table task generated significantly greater affect change than all tasks except for the directions list (p’s ≤ 0.001 for grocery list, purchase list; p = 0.005 to-do list; p >.70 for direction list). The direction list task produced significantly greater affect change than the grocery list.
(p = 0.002) and the purchase list (p = 0.028) tasks, but not the to-do list task (p > 0.70). Finally, the grocery list, purchase list, and to-do list tasks did not differ (all p’s > 0.50).

Before comparing the single task groups, we ran a between-groups t-test to confirm that there were no baseline differences in initial affect. Mean initial affect was a 3.69 (SD = 3.50) for the single task group and 4.05 (SD = 3.26) for the sequence group, which did not differ (t(612) = 1.325, p > 0.15). We then ran a 2X5 ANOVA (means plotted in figure 2.3) to compare affect change by final (or single) task and group (sequences from studies 1a or 1b versus single-task).

Figure 2.3. Total affect change by single task and sequences. Participants in studies 1a and 1b completed sequences of tasks, while those in study 2a completed a single task only. All participants rated affect before and after the task(s) they completed and we calculated a score of their affect change. Comparisons to study 1a are on the left and comparisons to study 1b are on the right.

There was a main effect of task (F(4,604) = 15.307, p < 0.001), with comparable differences between tasks to those observed across the single-task group. However,
there was no main effect of group ($F(1,606) = 0.290$, $p > 0.50$), with tasks producing an equivalent amount of affect whether they were experienced at the end of a sequence or on their own. Finally, there was no interaction between group and task ($F(4,606) = 0.389$, $p > 0.80$), suggesting that this relationship held across all tasks, regardless of whether they were completed alone or at the end of a sequence.

We also ran a chi-square test of independence to assess whether or not participants wanted to complete all of the tasks in approximately the same position in a hypothetical sequence with two other easy tasks. Across all tasks (see figure 2.4), participants showed a preference to complete the task they just finished first in a sequence of three. However, we also found that there was a difference across tasks ($\chi^2(8, n = 280) = 17.567$, $p = 0.025$), with those who completed either the purchase list or to-do list task showing an increased preference to complete that task in either the second or third position of a hypothetical sequence (50.0% and 50.9%, respectively, compared to 30% or less for all other groups). Finally, we observed a significant positive relationship between affect change and the desire to be a future study ($r = 0.161$, $p = 0.007$).
Figure 2.4. Participants were asked to imagine a sequence involving the task they just did and two hypothetical easy tasks. They then selected whether they would prefer to complete the task they just did first, second, or third in that sequence.

**Summary – Study 2a**

We ran study 2a to assess the unique impact of each of the tasks we used in studies 1a and 1b. We had five different groups of participants complete a single task, and we found a significant difference in affect change across the tasks. As expected, we found that the hard tasks produced significantly greater affect change (in the negative direction) than the easy tasks. The dining table was the most negative of all, followed by the directions task. The mean affect change for the to-do list and purchase tasks was close to zero, while the grocery list produced slightly positive affect on average.

We also compared the impacts of the tasks individually to the sequences that ended on that same task. We did not observe a difference in affect change based on whether or not the task was completed alone or at the end of a sequence. We also saw no interaction between task and which group participants were in (single task
or sequence). For example, the affective change of the dining table task alone was similar to a sequence where two easy tasks were completed prior to ending on the dining table task. Thus, those who completed one difficult task only had the same ultimate affective consequences as those who completed two easy tasks before the aversive one.

As in studies 1a and 1b, affect change correlated with desire for a similar study in the future. However, we also had participants make judgments about when they would prefer to complete the tasks they just performed in a hypothetical sequence with two other easy tasks. The majority of participants, even those who completed one of the hard tasks, indicated a preference to complete the same task they just did first in a hypothetical sequence with two easy tasks. Interestingly, those who had two of the easier tasks (to-do list and purchase list) were more ambivalent about this and did not have as strong a preference to complete it third.

Broadly speaking, the results of this study provided more support for the end effect we observed in studies 1a and 1b. Now that we had a better gauge of the affect generated by the tasks alone, we next ran study 2b to determine whether prior knowledge of task number had an impact on affect change across different hard task positions.
Part 2

Introduction – Study 2b

In addition to the effects of single tasks versus sequences, we also didn’t know if participants in Studies 1a and b suspected that they were finished with the main sequence after completing the three tasks. Although this was intentional, it diverges from a scenario where one deliberately engages in one task after another with a clear endpoint. To remedy this, we gave participants in Study 2b explicit information about the number of tasks before they began and reiterated this information as they progressed through the sequence.

The purposes of this study were twofold. First, we sought to replicate our order effects and confirm that they were not due to lack of expectation. Simultaneously, we wanted to assess the impact of a sense of completion and finality. This was again a between subjects design, where groups completed the hard task at the beginning, middle, or end of a sequence. Participants in study 2b were compared against each other by hard task position. They were also compared to those who had the same sequences but no explicit knowledge of how many tasks they would be completing. As in studies 1a and 1b, participants rated their affect, the individual tasks, the global experience of doing the tasks, their desire for a future study, and their preferred order to complete the hard task.

We hypothesized that the end effect would persist, with those who completed the hardest task at the end showing the greatest decrease in affect. Additionally, we
expected to again see unique correlations between ratings of the third task and ratings of final affect, as were observed in studies 1a and 1b. We also hypothesized that participants who knew that they were done would feel better than those who did the same tasks but lacked this knowledge in study 1a. Full satisfaction cannot be attained until a goal is truly complete (Latham, 2004) and participants in the first group were deprived of the explicit knowledge that they were finished.

This increase in affect could potentially come from two different sources. The participants who knew that the third task was their final one might have simply had a better experience in the third task than those who lacked this knowledge. Alternatively, participants with this knowledge might have had a better experience during the entire sequence, specifically for global accomplishment. As such, we tested whether differences existed between studies 1a and 2b in terms of final task ratings and global ratings. We again expected to see a similar connection between affect change and the desire for a future study. Although we did not anticipate our order preference findings in studies 1a and 1b, we predicted that we would replicate this same pattern, with the majority of participants preferring to complete the hardest task at the end of the sequence.

**Methods – Study 2b**

**Participants**

193 participants completed a sequence of one hard and two easy tasks in a single session study on Qualtrics. They were randomly assigned to one of three hard position groups, with approximately 64 in each group. A total of 30 were excluded
for the following reasons: 27 for failure to complete the dining table task within a pre-determined limit of 15 minutes (based on prior studies), 1 for failing an attention check, 1 for participating in twice on the same day, and 1 who felt pressed for time due to an MTurk issue. Our final number of participants was 163 (95 female; mean age = 33.58, SD = 9.36; mean years of education = 15.30, SD = 2.16). 50 participants completed the hard task first, 57 completed it second, and 56 completed it last in the sequence.

**Experimental Procedures**

Participants were recruited via Amazon’s Mechanical Turk for a study where they will ‘perform several everyday tasks.’ Participants were between 18 and 65 years old and fluent in English. They were also told that the sessions would last approximately 40 minutes and involve a combination of tasks, questionnaires, and demographic information. Participants provided informed consent in accordance with the Columbia University Institutional Review and were paid at a rate of $4.00 for the session (approximately $6.00/hour).

The vast majority of procedures in this study were identical to study 1a and 1b, and we chose to repeat the set of tasks from study 1a (grocery list, to-do list, and dining table) due to the strong affect response generated by the dining table. After giving consent, participants made initial positive and negative affect ratings, completed three tasks in a serial order, and made ratings of final affect. We again varied whether the hard task occurred first, second, or third in the sequence and counterbalanced the easy tasks. Participants completed a randomized block of
global ratings of the experience, their desire to complete a similar study in the
future, and their preferred order for completing these tasks in the future. They then
made similar ratings for each of the individual tasks in randomized blocks, which
occurred in the order they completed them. Finally, they completed the same
questionnaires as in study 1a, provided demographic information, and were
debriefed.

Analysis

Many of the statistical procedures were identical to those in studies 1a and 1b. The
main exception was in cases where we were directly comparing study 1a to study
2b. As in the prior studies, we began by creating a composite score of positive and
negative affect that we used for initial affect, final affect, and total affect change. We
ran a 1X3 ANOVA to test for differences in initial affect and affect change, with hard
task position as a between-subjects factor. When this test yielded significant
differences, we followed this with Bonferronni-corrected t-tests between the
different conditions. To determine the contributions of the different task positions,
we ran multiple linear regressions with task 1, 2, and 3 behavioral ratings, along
with initial affect, predicting final affect. We also ran between-groups t-tests for
initial affect and global ratings of the experience. When these global measures were
significantly different between groups, we ran linear regressions between global
ratings and affect change. Linear regressions were also run to test for correlations
between affect change and the desire for a future study. Finally, chi-square tests
were run to test for differences in order preferences based on when participants completed the most difficult task.

**Results – Study 2b**

We began by confirming that participants across the different orders had comparable ratings of initial affect. Mean initial affect was 3.40 (SD = 3.26) for the HEE order, 3.77 (SD = 3.98) in the EHE order, and 4.21 (SD = 2.55) for the EEH order. A 1X3 ANOVA showed that there was no difference between these groups (F(2,160) = 0.800, p > 0.40). We also wanted to ensure that our participants expected there to be exactly three tasks in the session (figure 2.5). Across the different orders, the percentage of participants who expected three tasks ranged from 82.0 – 93.0 % in the HEE and EEH orders, respectively). A chi-square test of independence showed that these percentages did not differ based on hard position (χ²(2, n = 163) = 2.989, p > 0.20).
Participants were asked how many tasks they expected to complete. Participants were able to choose 1 through 6 or that they were unsure. Answers were separated into a binary of exactly 3 or any other answer (another number of unsure).

Following this, we sought to replicate our affect change findings even when participants knew they would be completing three tasks (see figure 2.6). A 1X3 ANOVA found a difference across orders ($F(2,160) = 3.589, p = 0.03$). Post-hoc Bonferroni-corrected t-tests showed that there was a significant difference ($p = 0.035$) between the EEH (mean = -0.75, SD = 2.80) and EHE (mean = 0.44, SD = 2.41) orders, but not between the HEE (mean = .20, SD = 2.16) and either of the other conditions. When the participants who did not expect three tasks were excluded, mean values were essentially unchanged, although the ANOVA results dropped to a trend-level ($F(2,140) = 2.866, p = 0.06$) due to the reduced number of participants.
Figure 2.6. Mean affect change for the different hard task positions. * = p < 0.05; error bars = +/- 1 SEM.

Given this observed difference across the orders, we hypothesized that it could be again heavily influenced by the experience of the final task. As such, we ran a multiple regression with task 1, 2, and 3 ratings, as well as initial affect, predicting final affect (see table 2.1). As in studies 1a and 1b, total affect was a significant predictor in all analyses (all β's > 0.60, all p's < 0.001). Also similar to those studies, task 3 enjoyment (β = 0.241, p < 0.001) and difficulty (β = -0.212, p < 0.001) were significant predictors of final affect. Additionally, task 3 accomplishment (β = 0.195, p = 0.006) and engagement (β = 0.216, p = 0.002) showed a similar pattern, which was also observed in study 1b. Task 3 effort, as well as task 1 and 2 ratings from all variables did not show a significant relationship with final affect in these analyses.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Enjoyment β (p)</th>
<th>Difficulty β (p)</th>
<th>Engagement β (p)</th>
<th>Accomplishment β (p)</th>
<th>Effort β (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1</td>
<td>.028 (.60)</td>
<td>-.083 (.145)</td>
<td>-.083 (.222)</td>
<td>-.089 (.173)</td>
<td>.001 (&gt;90)</td>
</tr>
<tr>
<td>Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task 2</td>
<td>.010 (.80)</td>
<td>-.001 (.90)</td>
<td>.000 (.90)</td>
<td>.050 (.40)</td>
<td>.086 (.168)</td>
</tr>
<tr>
<td>Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Task 3 Rating | .241  
|              | (<.001***)| .212  
|              | (<.001***)| .195  
|              | (.006**) | .216  
|              | (.002**) | .091  
|              | (.136)   |
| Initial Affect | .688  
|               | (<.001***)| .730  
|               | (<.001***)| .698  
|               | (<.001***)| .678  
|               | (<.001***)| .721  
|               | (<.001***)|

Table 2.1. Multiple regressions using initial affect and task ratings of enjoyment, difficulty, engagement, accomplishment, and effort to predict final affect. Each column shows a separate analysis, with the first three rows representing task 1, 2, and 3 ratings of the variable at the top of the column and the final representing initial affect. Each data box contains a beta (top row) and p-value (bottom row) for that variable in the regression.

Before testing affect change between groups, we ran a between-groups t-test for initial affect and confirmed that this did not differ (t(320) = 0.795, p > 0.40) between those who had knowledge of task number (mean = 3.81, SD = 3.32) and those who did not (mean = 4.09, SD = 3.10). We then tested how affect change for both groups and all three task orders (see figure 2.7). A 2X3 ANOVA found that there was a main effect of order (F(2,316) = 8.516, p < 0.001), a main effect of group ((F(1,316) = 7.924, p = 0.005), and no interaction between them (F(2, 316) = 0.176, p > 0.80).

Thus, we still observed the same affect change pattern across orders, but those who had prior knowledge of task number had a more positive affective experience across all groups. Given that the third task has a disproportionate influence on final affect, we hypothesized that this group difference in affect change could be due to a better experience in the final task. However, despite the prior knowledge group having trend level higher effort ratings (t(320) = 2.953, p = 0.087), we did not find any significant between-groups differences in any of these variables when comparing them across groups (all other p’s > 0.10, see table 2.2).
Figure 2.7. Mean differences in total affect by hard position and task group (whether or not participants had prior knowledge of task number). Error bars = +/- 1 SEM.

<table>
<thead>
<tr>
<th>Task 3 Rating</th>
<th>Study 1a: No Prior Knowledge (SD)</th>
<th>Study 2b: Expected 3 Tasks (SD)</th>
<th>t-value (df = 320)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 3 Enjoyment</td>
<td>4.42 (2.35)</td>
<td>4.84 (2.55)</td>
<td>2.343</td>
<td>0.127</td>
</tr>
<tr>
<td>Task 3 Difficulty</td>
<td>4.62 (2.82)</td>
<td>4.52 (2.99)</td>
<td>0.086</td>
<td>&gt; 0.70</td>
</tr>
<tr>
<td>Task 3 Accomp.</td>
<td>5.31 (2.40)</td>
<td>5.66 (2.61)</td>
<td>1.664</td>
<td>0.198</td>
</tr>
<tr>
<td>Task 3 Engagement</td>
<td>5.78 (2.11)</td>
<td>5.94 (2.28)</td>
<td>0.419</td>
<td>&gt; 0.50</td>
</tr>
<tr>
<td>Task 3 Effort</td>
<td>6.22 (2.41)</td>
<td>6.67 (2.28)</td>
<td>2.953</td>
<td>0.087†</td>
</tr>
</tbody>
</table>

Table 2.2 Mean ratings and standard deviations for final task ratings of enjoyment, difficulty, accomplishment, engagement, and effort for studies 1a and 2b. Between-groups t-tests (df = 320) were run to test for differences in these variables.

Rather than a difference in task 3, participants may have had a more positive experience across the entire experiment. As such, we ran between-groups t-tests for the different global variables (see table 2.3). We found that participants who had knowledge of task number had a more enjoyable experience (t = 2.133, p = 0.034)
and felt more accomplished than those who did not have this knowledge (t = 2.136, p = 0.033). However, we did not observe similar differences for the variables of difficulty, engagement, and effort between the groups (all t’s < 1.4, p’s > 0.15). As a follow-up, we ran a linear regression with affect change and enjoyment and engagement. In both cases, there was a significant positive relationship between them (r = 0.197, p < 0.001 for accomplishment; r = 0.287, p < 0.001 for enjoyment).

<table>
<thead>
<tr>
<th>Global Rating</th>
<th>Study 1a: No Prior Knowledge (SD)</th>
<th>Study 2b: Expected 3 Tasks (SD)</th>
<th>t-value (df = 320)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gl. Enjoyment</td>
<td>4.30 (2.08)</td>
<td>4.82 (2.34)</td>
<td>2.133</td>
<td>0.034*</td>
</tr>
<tr>
<td>Gl. Difficulty</td>
<td>5.58 (2.13)</td>
<td>5.29 (2.19)</td>
<td>1.206</td>
<td>&gt; 0.20</td>
</tr>
<tr>
<td>Gl. Accompl.</td>
<td>5.40 (2.48)</td>
<td>5.98 (2.38)</td>
<td>2.136</td>
<td>0.033*</td>
</tr>
<tr>
<td>Gl. Engagement</td>
<td>6.17 (2.08)</td>
<td>6.47 (1.96)</td>
<td>1.342</td>
<td>.180</td>
</tr>
<tr>
<td>Gl. Effort</td>
<td>7.14 (1.64)</td>
<td>7.31 (1.68)</td>
<td>0.911</td>
<td>&gt; 0.30</td>
</tr>
</tbody>
</table>

Table 2.3. Mean ratings and standard deviations for global ratings of enjoyment, difficulty, accomplishment, engagement, and effort for studies 1a and 2b. Between-groups t-tests (df = 320) were run to test for differences in these variables.

Finally, we were again interested in the implications for future behavior. As in studies 1a and 1b, we observed a significant positive relationship between affect change and the desire for a future study (r = 0.334, p < 0.001). In terms of order preferences (figure 2.8), we also replicated our finding that the greatest number of participants wanted to complete the hardest task in the final position (range = 54.4 - 62.5%). This did not differ by when they completed the hardest task ($\chi^2(4, n = 163) = 0.961, p > 0.90$).
Figure 2.8. Participants were asked to list their preferred order for completing the tasks. Bars represent the percentage of responses for task position when participants wanted to complete the most difficult task (beginning, middle, or end of a sequence). These results are separated by when they experienced the hard task (HEE = first, EHE = second, and EEH = third).

**Summary – Study 2b**

In this study, we primarily sought to replicate the order effects we observed in studies 1a and 1b and demonstrate that these were not simply due to lack of knowledge about task number. To do so, we provided participants with this information at the beginning of the study, as well as during the sequence of tasks. We again observed the greatest change in total affect in those who completed the most difficult task at the end of the sequence. As in studies 1a and 1b, task 3 enjoyment and difficulty were significant predictors of final affect. Additionally, we observed that task 3 engagement and accomplishment also predicted final affect, which we also found in study 1b.

We were also interested in the differences between the affective experience of those with and without prior knowledge of task number. We found a significant main
effect between these groups, as those with prior knowledge had a more positive affective experience overall. There was no interaction between task order and knowledge group, as this increase did not vary across hard task position. Although the difference was slightly weaker, we observed similar results when we excluded the participants who did not explicitly answer that they expected exactly three tasks. It is not entirely clear whether they did not encode this information or whether they simply misunderstand our usage of the term ‘task.’ Despite our best efforts to clarify these terms, these participants may have missed the distinction between tasks and other similar features of our experiment, as they also completed questionnaires and provided ratings.

When comparing across studies, we hypothesized that participants who knew there would be exactly three tasks may have had a more positive experience in the third task than those without this knowledge. However, we did not observe any differences between groups in ratings of the final task. Instead, global ratings of enjoyment and accomplishment were both greater in the group with prior knowledge, and both of these variables were correlated with affect change. Affect change was also significantly correlated with the desire to be in a similar study in the future, and participants exhibited a similar pattern of order preferences as in studies 1a and 1b. Again, a majority of participants wanted to complete the most difficult task at the end of a sequence, regardless of when they completed the most difficult task.
Overall, this study provides more evidence that completing a hard task at the end of a sequence produces a worse affective change than completing it earlier. It also adds to further support to the idea that the experience of the final task has a disproportionate bearing on final affect. Additionally, it suggests that knowing one is done with a sequence of tasks produces less negative affect than not having this information. In the final two studies, we will have participants simply read about the tasks in different orders and predict how they expect to feel upon completing them. This will answer the questions as to whether or not participants have any knowledge that task order may play a role in how a sequence of tasks makes them feel.
Chapter 3

Introduction – Studies 3a and 3b

In our final two studies, we sought to test whether or not people predict differences in affect change based on hard task position within a sequence. This answers the question as to whether or not people have any awareness that the timing of aversive tasks within a sequence may differentially change their affective state. If they do predict these differences, this may factor into decisions that adaptively minimize experienced negative affect.

We used the same tasks as studies 1a and 1b, and the task set up was nearly identical, beginning again with a rating of pre-task affect. The major exception is that the tasks were merely described to participants, who then rated how they expected to feel after they complete these tasks. Rather than experienced affect change, we instead calculated expected affect change by using the difference score of pre-task affect and post-task expected affect.

We hypothesized that we would see a similar pattern of affective results from before, with participants expecting the EEH to lead to the largest decrease in affect. Loewenstein and Prelec (1993) showed that people choose sequences that get better rather than worse, such as seeing an unpleasant relative this week and friends next week, rather than the reverse. Similar to this, Varey and Kahneman (1992) found an end effect when participants judged sequences of aversive events. We also predicted that participants might correspondingly display some awareness of the end effect. As such, their behavioral ratings of the third task should have a
disproportionate weight on ratings of final affect. However, if affect is not different across task orders, it may be due to a lack of knowledge about the role of the final task.

To inform our predictions between studies, we drew from studies where participants rated how they expected to feel following a negative life event. Predictions of future states are typically referred to as ‘affective forecasting,’ and previous studies have suggested that people are not particularly skilled at this. In an influential study by Gilbert et al. (1998), participants predicted that negative life events, such as a romantic breakup, would make them feel worse (and for a longer duration) than they actually did. One explanation for this is known as ‘impact bias,’ which is caused by underestimating the role of other events in one’s life and the speed at which psychological coping may occur (Wilson & Gilbert, 2005). However, these prior studies have not typically involved sequences of separate everyday tasks, and we were interested to see whether or not this effect will generalize in our experiment.

If a similar pattern is present for sequences of tasks, we expected to see ratings of expected affect change that are much more negative than the participants in studies 1a and 1b actually experienced. This could occur if they overestimate how negative the entire experience will be. With this in mind, we predicted that a difference in affect change across studies might be accompanied by a difference in global ratings. Similar to all previous studies, we predicted that we would again see a significant positive correlation between expected affect change and the desire for a future
study. Finally, we predicted that participants might prefer to complete the hard task earlier in a sequence if they had not actually experienced it.

**Methods – Studies 3a and 3b**

**Participants**

In study 3a, 179 participants completed a single session on Qualtrics that primarily involved reading about and rating three main tasks. As in prior studies, they were randomly assigned to one of three hard position groups, with approximately 60 in each group. A total of 6 participants were excluded for the following reasons: 2 failed attention checks, 2 exceeded the age limit, and two were confused by the nature of the study and informed us that they completed the tasks by accident. Our final n was 173 participants (70 female, mean age = 33.76, SD = 9.40; mean years of education = 15.24, SD = 1.82). 58 participants were in the hard task first group, 56 were in the hard task second group, and 59 were in the hard task last group.

In study 3b, 180 participants completed a single session on Qualtrics that also primarily involved reading about and rating three main tasks. As in study 3a, participants were randomly assigned to one of three hard position groups, with approximately 60 in each group. A single participant was excluded for failing the attention check, leaving our final n at 179 participants (80 female, mean age = 32.82, SD = 9.93; mean years of education = 14.97, SD = 1.95). 60 participants read about the hard task at the beginning of a sequence of three, 59 read about it second, and 60 read about it last.
Experimental Procedures

Participants in both studies were recruited via Amazon’s Mechanical Turk for a study that ‘involves several everyday behaviors.’ Participants were between 18 and 65 years old and fluent in English. They were told that the session would last approximately 25 minutes and involve tasks, questionnaires, and demographic information. We were careful at all points during the session to choose wording that left it ambiguous as to whether or not they would actually be completing any of the tasks they read about. Participants provided informed consent in accordance with the Columbia University Institutional Review Board and were paid at a rate of $2.50 for the session (approximately $6.00/hour).

All procedures in these studies were identical to study 1a and 1b, with the major exception being that participants merely read about tasks rather than complete them. In study 3a, we used the same tasks as study 1a (grocery list, to-do list, and dining table), while those in study 3b had the same tasks as those in study 1b (grocery list, purchase list, and directions). Participants gave consent, made initial positive and negative affect ratings, and read about three tasks in a serial order. Rather than make a rating of how they felt after the sequence, they instead made a rating of how they expected to feel once they completed all three tasks. We again varied whether the hard task occurred first, second, or third in the sequence and counterbalanced the easy tasks.

We had participants make similar ratings to studies 1a, 1b, and 2b about their global experience, desire to be in a similar study, order preferences, and the individual
tasks. Again, the key difference here was that global and individual task ratings were made based on how they expected their experience to be in terms of difficulty, enjoyment, and the other variables. As in prior studies, the global ratings, desire for a future study, and order preferences occurred in a randomized block following final affect ratings. Also as before, the individual task ratings were made in randomized blocks that occurred in the same order as they read about the different tasks. Finally, they completed the same questionnaires as in studies 1a, 1b, and 2b, provided demographic information, and were debriefed at the end of the experimental session.

Analysis

Many of the statistical procedures were identical to those in prior studies. Comparisons were made between the subjects of study 3a or 3b alone, or between those who experienced the tasks and participants who made predictions about the same set of tasks (study 1a versus 3a and study 1b versus 3b). We first created a composite score of total affect using ratings of both positive and negative affect. To test for differences across orders, we ran 1X3 ANOVA’s for initial affect and affect change. This was followed by a Bonferroni-corrected t-test when differences were significant. Additionally, initial affect was added into our analysis of affect change in study 3a due to baseline differences between orders. To test whether or not any task position best predicted final affect, we ran multiple regressions with initial affect and ratings of task 1, 2, and 3 individually as predictors.
As in study 2b, we ran between-groups t-tests for initial affect and global ratings of the experience. When significant differences existed between the groups on global ratings, we ran linear regressions between these variables and affect change. Linear regressions were also used to assess the relationship between affect change and the desire for a future study. Finally, a chi-square test was run to determine whether or not any differences existed in order preferences based on when they read about the hard task within a sequence.

Results – Study 3a

We began by testing whether participants in study 3a were in a similar affective state prior to reading about the tasks. A 1X3 ANOVA showed that there was a difference in initial affect between the orders (F(2,170) = 3.280, p = 0.04). A follow-up Bonferroni-corrected test found that those who were in the EEH group had greater initial affect (mean = 4.66, SD = 2.52) than those in the EHE group (mean = 3.14, SD = 3.54, p = 0.035 for the difference). Those in the HEE group had a mean initial affect of 4.05 (SD = 3.43), which did not differ from the other groups. Although this difference in baseline affect was likely due to chance (participants had not experienced any experimental manipulations at this point in the study), we included it as a covariate in our analysis of affect change.

We next ran a 1X3 ANOVA on expected affect change (see figure 3.1). Mean expected affect change was -2.83 (SD = 3.70) for the HEE group, -2.46 (SD = 3.39) for the EHE group, and -2.95 (SD = 3.68) for the EEH group. These ratings did not differ based on task position (F(2,170) = 0.281, p > 0.70). When initial affect was included in the
1X3 ANCOVA of expected affect change, it was neither a significant predictor nor a moderator of affect change in this analysis.

![Study 3a: Affect Change by Hard Position](image)

Figure 3.1. Mean predicted affect change for the different hard task positions. Error bars = +/- 1 SEM.

Given that we did not observe any significant differences in expected affect change, we wondered whether or not participants were putting a disproportionate weight on final task ratings. To test this, we ran a multiple regression using ratings from all task positions and initial affect to predict final affect (see table 3.1). Similar to prior studies, initial affect was a significant predictor in all analyses (all β’s > 0.40, all p’s < 0.001). Also similar to previous studies, task 3 enjoyment (β = 0.169, p = 0.013) and difficulty were predictive of final affect, though difficulty was only at a trend level (β = -0.117, p = 0.053). Unlike other studies, we observed a significant effect of task 1 enjoyment (β = 0.211, p = 0.001), task 2 enjoyment (β = 0.187, p = 0.005), task 1
difficulty ($\beta = -0.121, p = 0.042$), and task 2 engagement ($\beta = 0.174, p = 0.023$). All
other variables did not significantly predict final affect in these analyses.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Expected Enjoyment $\beta$ (p)</th>
<th>Expected Difficulty $\beta$ (p)</th>
<th>Expected Engagement $\beta$ (p)</th>
<th>Expected Accomplishment $\beta$ (p)</th>
<th>Expected Effort $\beta$ (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1 Rating</td>
<td>0.211 (0.001***)</td>
<td>-0.121 (0.042*)</td>
<td>0.035 (&gt;.60)</td>
<td>0.137 (&gt;.104)</td>
<td>-0.101 (&gt;.101)</td>
</tr>
<tr>
<td>Task 2 Rating</td>
<td>0.187 (0.005**)</td>
<td>-0.081 (.201)</td>
<td>0.174 (.023*)</td>
<td>0.005 (&gt;.90)</td>
<td>-0.008 (.&gt;80)</td>
</tr>
<tr>
<td>Task 3 Rating</td>
<td>0.169 (.013*)</td>
<td>-0.117 (.053†)</td>
<td>0.040 (&gt;.60)</td>
<td>0.103 (.192)</td>
<td>-0.090 (.149)</td>
</tr>
<tr>
<td>Initial Affect</td>
<td>0.408 (&lt;.001****)</td>
<td>0.585 (&lt;.001****)</td>
<td>0.566 (&lt;.001****)</td>
<td>0.537 (&lt;.001****)</td>
<td>0.625 (&lt;.001****)</td>
</tr>
</tbody>
</table>

Table 3.1. Multiple regressions using initial affect and task ratings of expected enjoyment, difficulty, engagement, accomplishment, and effort to predict final affect. Each column shows a separate analysis, with the first three rows representing task 1, 2, and 3 ratings of the variable at the top of the column and the final row representing initial affect. Each data box contains a beta (top row) and p-value (bottom row) for that variable in the regression.

We next wanted to test for differences between those who experienced the tasks and those who made predictions about them. Before doing so, we ran a between-groups t-test of initial affect and verified that there were no differences ($t(330) = 0.370, p > 0.70$). Those in study 1a had mean initial affect of 4.09 (SD = 3.10), while those in study 3a had mean initial affect of 3.97 (SD = 3.23). Following this, we ran a 2X3 ANOVA to test for the effect of hard task position, group, and the interaction between them (figure 3.2). This test revealed a trend-level main effect of hard task position ($F(2,326) = 2.952, p = 0.054$), a significant main effect of group ($F(1,326) = 28.036, p < 0.001$) and no interaction between these variables ($F(2,326) = 1.156, p > 0.30$).
Figure 3.2. Mean differences in actual or expected total affect by hard position and task group. Those who had completed the tasks are represented in solid colors (experienced affect change), while those who made predictions only are in shaded colors (expected affect change). Error bars = +/- 1 SEM.

Given the main effect difference between studies, we then tested for differences in global ratings of the actual or predicted experience. We thus ran between-groups t-tests for the global variables of enjoyment, difficulty, accomplishment, engagement, and effort (see table 3.2). We observed that global enjoyment ($t(330) = 3.818, p < 0.001$), engagement ($t(330) = 4.255, p < 0.001$), and effort ($t(330) = 4.255, p < 0.001$) were diminished in the prediction group, while global ratings of difficulty and accomplishment did not differ between groups. For the variables that were significantly different between groups, we ran a linear regression with affect change. Enjoyment ($r = 0.459, p < 0.001$) and engagement ($r = 0.289, p < 0.001$) had a significant positive relationship with affect change, while effort had a significant negative relationship ($r = -0.165, p = 0.002$).
Table 3.2 Mean ratings and standard deviations for global ratings of enjoyment, difficulty, accomplishment, engagement, and effort for studies 1a and 3a. For study 3a, all ratings represent expected values. Between-groups t-tests (df = 330) were run to test for differences in these variables.

Finally, as with prior studies, we were interested in measures of future behavior in study 3a. A linear regression again found a significant positive relationship between affect change and the desire to be in a future study (r = 0.449, p < 0.001). We next ran a chi-square test of independence and found a significant difference across orders ($\chi^2(4, n = 173) = 12.745, p = 0.013$). In this dataset, all groups still showed a majority preference to complete the hardest task in the final position (ranging from 57.1 – 72.9%, see figure 3.3). However, 29.3% of those who read about the hard task first wanted to complete it first, as compared to 17.9 and 16.9% of those who read about the hard task second or third, respectively.
Figure 3.3. Participants were asked to list their preferred order for completing the tasks. Bars represent the percentage of responses for task position when participants wanted to complete the most difficult task (beginning, middle, or end of a sequence). These results are separated by when they in the sequence the hard task was described (HEE = first, EHE = second, and EEH = third).

Results – Study 3b

As with prior studies, we began by testing whether or not participants had similar affect across groups prior to beginning the task. A 1X3 ANOVA found no difference between orders \( (F(2,176) = 0.061, p > 0.90) \). Mean initial affect was 3.55 \( (SD = 2.80) \) for the HEE order, 3.36 \( (SD = 2.96) \) for the EHE order, and 3.48 \( (SD = 3.46) \) for the EEH order. This was followed by a 1X3 ANOVA of expected affect change (figure 3.4). This did not reveal any differences between orders \( (F(2,176) = 0.741, p > 0.40) \) as mean expected affect change was -2.45 \( (SD = 4.42) \) for the HEE order, -2.47 \( (SD = 3.48) \) for the EHE order, and -3.20 \( (SD = 3.50) \) for the EEH order.
Figure 3.4. Mean predicted affect change for the different hard task positions. Error bars = +/- 1 SEM.

Similar to study 3a, we again did not observe a significant difference in expected affect change between the groups. We next sought to replicate the lack of end effect in study 3a in a multiple regression with individual task ratings and initial affect predicting final affect (table 3.3). As in all prior studies using this method, initial affect was a significant predictor in all analyses (all β’s > 0.40, all p’s < 0.001).

Similar to study 3a, task 2 enjoyment (β = 0.181, p = 0.012) and engagement (β = 0.263, p = 0.007) were positive predictors of final affect. Unlike study 3a, task 2 effort (β = -0.145, p = 0.043) was a significant negative predictor of final affect, while task 2 difficulty was correlated at a trend level (β = -0.116, p = 0.096). Additionally, task 1 effort also predicted final affect, but in the positive direction (β = 0.200, p = 0.006). All other variables did not have a significant relationship with final affect in these analyses.
Table 3.3. Multiple regressions using initial affect and task ratings of expected enjoyment, difficulty, engagement, accomplishment, and effort to predict final affect. Each column shows a separate analysis, with the first three rows representing task 1, 2, and 3 ratings of the variable at the top of the column and the final row representing initial affect. Each data box contains a beta (top row) and p-value (bottom row) for that variable in the regression.

As in study 3a, we sought to assess between-groups differences in experienced and expected affect change. Before testing this, we compared initial affect between the groups. Mean initial affect was 4.01 (SD = 3.40) for study 1b and 3.46 (SD = 3.07) for study 3b, which did not differ (t(352) = 0.113). We then ran a 2X3 ANOVA to test for differences across hard positions or groups, and the interaction between them (figure 3.5). This test showed a main effect of hard position (F(2,348) = 3.220, p = 0.041, a main effect of group (F(1,348) = 50.893, p < 0.001, and no interaction between hard task position and group (F(2,348) = 0.153, p > 0.80).
We again observed a main effect between studies, and thus sought to replicate whether or not there were again differences in global ratings of the experience. To test this, we ran between-groups t-tests for the global variables of enjoyment, difficulty, accomplishment, engagement, and effort (table 3.4). We found that all variables were significantly different between groups (all t’s > 4, all p’s < 0.001). Those in study 3b predicted that the tasks would be less enjoyable, less engaging, less effortful, more difficult, and produce less of a sense of accomplishment than participants in study 1b experienced them to be. We then ran linear regressions between all variables and affect change. Global ratings of enjoyment (r = 0.517, p < 0.001), engagement (r = 0.330 p < 0.001), and accomplishment (r = 0.350, p < 0.001) had a significant positive relationship with affect change, while difficulty (r = -0.373, p < 0.001) and effort (r = -0.104, p = 0.05) had a significant negative relationship.
Table 3.4. Mean ratings and standard deviations for global ratings of enjoyment, difficulty, accomplishment, engagement, and effort for studies 1b and 3b. For Study 3b, all ratings are expected, rather than experienced. Between-groups t-tests (df = 352) were run to test for differences in these variables.

We were again interested in the task variables that relate to future behavior. We began by running a linear regression, which found a significant positive correlation between affect change and the desire to be in a future study (r = 0.506, p < 0.001).

Finally, we ran a chi-square test of independence for order preferences and found a significant difference between hard task positions ($\chi^2(4, n = 179) = 34.086, p < 0.001$, see figure 3.6). For the first time in any of our studies, one group (HEE) showed a greater preference to complete the hard task first as opposed to last (46.7% to 41.7%). Those in both other groups showed a strong preference to complete the hard task last (64.4 and 60% in the EHE and EEH orders, respectively). In the EHE and EEH groups, very few participants wanted to complete the hard task first (6.7 and 11.6%, respectively).
Figure 3.6. Participants were asked to list their preferred order for completing the tasks. Bars represent the percentage of responses for task position when participants wanted to complete the most difficult task (beginning, middle, or end of a sequence). These results are separated by when they read about the hard task (HEE = first, EHE = second, and EEH = third).

**Summary – Studies 3a and 3b**

In studies 3a and 3b, participants read about a sequence of tasks and then rated how they expected to feel upon completing them. As in studies 1a and 1b, the position of the hard task was varied across the different groups. In contrast to those who actually completed the tasks, we did not see a significant difference in affect change based on the position of the hard task. Thus, those in studies 3a and 3b did not predict that the orders would make them feel differently, even though a separate group of participants did indeed show differences in affect change based on hard task position.

This lack of difference across orders was accompanied by a lack of clear end effect when running multiple regressions to assess the contribution of different task...
positions on final affect. However, we did observe that a few variables were significantly correlated with final affect. In both study 3a and 3b, task 2 enjoyment and engagement showed a positive relationship with final affect. In study 3a, we found that task 1 and 3 enjoyment were positively correlated with final affect, while task 3 difficulty was negatively correlated. In study 3b, task 1 effort was positively correlated with final affect, while task 2 effort showed a negative correlation.

In both study 3a and 3b, those who made predictions about the sequences thought they would have a much more negative change in affect than those in study 1a and 1b actually experienced. This was accompanied by a difference in many global ratings between studies. In both study 3a and 3b, participants predicted that the tasks would be globally less enjoyable, engaging, and effortful than those in study 1a and b experienced them to be. Additionally, those in study 3b rated the expected global difficulty to be higher and accomplishment to be lower than those in study 1a experienced them. In many of these cases, these ratings were correlated with affect change in a way that would lead to lower affect overall. The one exception was effort, which was predicted to be lower in studies 3a and 3b than it was actually rated in studies 1a and 1b. However, effort exhibited the weakest correlation with affect change of all global variables tested.

Finally, predicted affect change showed a significant positive correlation with the desire for a future study, similar to experienced affect change in the other studies. In terms of preferences, a majority of those in both studies who read about the hardest task second or third wanted to complete it in this position. However, those who read
about it first disproportionately wanted to complete it first. In study 3b, the percentage of participants in the HEE who wanted to complete it first actually exceeded the number who wanted to complete it third.

In the final section of this dissertation, the results of all studies will be integrated and discussed. This will include implications, limitations, and future directions that this research may take.
General Discussion

Overall Summary

We started this series of studies with the broad question: Does the order in which people complete hard and easy tasks lead to differential changes in their affect? To probe this, we initially ran two studies where participants completed a sequence of one hard and two easy tasks with minimal expectations. Using two sets of tasks, we found that those who completed the hard task at the end had the greatest decrease in total affect.

We next performed two follow-up studies to better understand this first set of results. The first study had participants complete a single task, rather than a sequence, to determine its unique affective impacts. In isolation, the hard tasks led to a much greater drop in total affect than the easy tasks. Regardless of difficulty, all of the tasks produced affect changes that were comparable to sequences that ended on that same task.

The second follow-up study tested the role of explicitly knowing how many tasks were in a sequence prior to beginning. We replicated our initial finding that those who completed the hardest task at the end had the greatest drop in affect. We also found a main effect of group, where participants who had an expectation about task number had greater affect across the board than those who did not.

Finally, we wanted to know if participants would predict affective differences from completing the tasks in different orders. Participants in both studies did not show significant differences in expected affect across the orders in either study 3a or 3b.
However, we observed a main effect of group, where participants predicted that all of the orders would lead to a greater drop in affect than other participants actually experienced from completing them.

The results of these studies demonstrate the differences in the experienced and predicted affective consequences of ending a sequence on the most difficult task. We also used task specific ratings to show that the experience of the last task in a sequence was frequently more predictive of final affect than the experience of the first two tasks. In combination with the results of the single task study, these data suggest an end effect in experienced task sequences. In contrast to those who experienced the tasks, we did not see clear evidence for an end effect in the studies where participants made predictions. We also did not observe that experienced or predicted affect change was moderated by total task time, Grit scores, or Locomotion scores, suggesting that our findings were consistent across individuals and that our participants exhibited the property of duration neglect.

Our results also have implications for future behavior. For starters, our measure of affect change showed a consistent positive relationship with the desire for a future study, supporting the validity of this measure for peoples’ future actions. In terms of order preferences, there seemed to be a default pattern where participants who had just completed the tasks in any order would have preferred to complete the hardest task last. For those who were making predictions only, many of the participants also wanted to complete a hard task at the end. However, we did observe differences between the orders in both studies 3a and 3b. In both cases, a higher percentage of
those in the HEE order than the other orders would have preferred to complete the hard task first. This result might suggest that presentation order may be a factor in shifting preferences. More striking, the majority of all participants in study 2a would have repeated the same task they just did – including the difficult tasks – in a hypothetical sequence with two ‘easy,’ but unknown, tasks.

We also collected ratings of the global experience. In study 1a, we did not find any differences across groups in any of the variables tested. In study 1b, however, the EEH order was less enjoyable than both of the other orders. It was also less engaging and was trending towards a lower sense of accomplishment than the HEE order. In studies 2b, 3a, and 3b, we tested for differences in the global experience between studies. In study 2b, those with prior knowledge of the task number felt more accomplished and found it to be more enjoyable than the without this knowledge in study 1a. In studies 3a and 3b, both groups who made predictions anticipated that the sequence would be less enjoyable, less engaging, and also less effortful than the actual experiences in studies 1a and 1b. Additionally, those in study 3b also predicted that the experience would be more difficult and feel like less of an accomplishment than those in study 1b did. These global variables were significantly correlated with affect change in all regressions run. With the exception of effort ratings in studies 3a and 3b, all of the correlations were in a direction that would yield more positive affect, consistent with between-study main effects.

The results of studies 1a, 1b, 2a, and 2b suggest that there are consistent affective differences based on task order, and that difficult tasks may lead to a drop in affect
whenever they occur. Broadly speaking, those who completed the most difficult task at the end of a sequence had a greater decrease in total affect than those who completed it earlier. This pattern was replicated in those who knew that the last task was their final one, and knowledge of total task number increased participants’ affect, enjoyment, and sense of accomplishment overall. These data point to an end effect, as final task ratings had a disproportionate bearing on final affect. In spite of all of this, participants generally preferred to complete the hardest and least enjoyable task at the end of a sequence rather than earlier on.

Other participants read about the tasks and did not predict a difference in affect change based on hard task position. Their data also did not exhibit an end effect. However, they consistently overestimated the negative impacts of the sequences and imagined the global experience to be worse than it was for those who completed the tasks. Similar to the experiencers, a majority of all participants in both prediction studies wanted to save the hardest task until the end. Interestingly though, those who had the hard task described first to them were more likely to prefer completing it first than those who had it described in different positions. In the group that only completed a single task, the majority of participants who completed a hard task would choose this first in a sequence with two other easy tasks, contrary to the findings of the other studies.

**Limitations and Future Directions**

One important limitation of these studies pertains to how long lasting our effects might be. In our studies, we measured affect immediately after the sequence of tasks
and did not collect these data again after a delay. Our findings suggest that the affective impacts of the difficult tasks we used may subside during the completion of an easy task. Additionally, it is possible that affect goes back up to baseline after a rest period, which we did not give our participants during these studies. Regardless of these possibilities, many tasks may lead to a significantly greater drop in affect than the ones used in our studies. While completing easy tasks afterwards may not reset affect completely in such a situation, it may still leave the individual feeling better than they would be otherwise. And if someone chronically leaves the most difficult task to the end of the workday, that person may leave their office feeling worse than they need to on a daily basis. Not only does negative affect feel subjectively unpleasant, it is also associated with a range of negative outcomes, including self-regulation failure. In a recent book chapter, Wagner and Heatherton (2015) referred to negative affect as one of the “seven deadly threats to self-regulation,” due to its negative effects on working memory capacity and the ability to consider long-term consequences.

In addition to the duration of affect changes, we also did not test participants’ short or long-term memory for this experience. Ideally, participants would remember what order they completed the tasks in and how this made them feel. With this knowledge, they could make more informed choices about when to complete hard tasks they encounter later. Future studies could have participants complete a memory test for both task order and experienced affect change. Participants could complete this test after a delay ranging from several minutes to several weeks to
determine how accurately this information is stored and whether it varies by hard task position.

Another important limitation relates to the stimuli themselves. We selected tasks that were not done for recreation and that the average adult could complete in a timely manner. We believe that this was a reasonable simulation of a person completing a series of hard and easy tasks as they might do in everyday life. However, we fully acknowledge that difficult tasks can be an enjoyable challenge that leads to positive feelings (Locke and Latham, 1990), and that non-affective factors such as motivation or logistics may be considerations. Furthermore, the tasks we used may be idiosyncratic and not represent the many non-cognitive tasks that individuals perform in their normal lives. There are also a variety of other affective events that people experience day-to-day. From aversive pictures (Denny et al., 2015; Ochsner et al., 2002) and film clips (Schotte, Cools, and McNally, 1990) to prompts that reduce self-esteem (Wagner et al., 2012), psychologists have employed a variety of stimuli in their studies of negative affect. Future studies could test whether similar results are seen across domains using a single aversive stimulus and two affectively neutral ones. By including stimuli that are passively experienced, future studies may also shed light on whether or not our results are due to the active performance of the tasks rather than a more general property of affective sequences.

Finally, we did not collect data on the predicted affective impacts of each of the individual tasks. Our results showed that participants did not predict affective
differences based on the position of the hard task within a sequence. However, we don’t know if they overestimated the impacts of all tasks or just the most difficult one. Also, we did not observe a clear end effect in these data. Thus, participants are likely using an internal model for predicted affect that differs from the one used during experiences. It would be interesting to find out, for example, that the sum of the predicted unique impacts of the tasks was similar to the cumulative expected affect change for the entire sequence. A future study could obtain these values and better approximate the predicted impacts across the sequence. Also, if the predicted impacts of the easy tasks are substantially lower than those for the hard tasks, participants could be encouraged to focus more on the easy tasks when considering the effects of sequences. Using a similar method, Wilson et al. (2000) directed participants’ attention to other activities in their future and demonstrated a reduction in impact bias for aversive events.

**Implications**

Despite these limitations, these results have interesting implication for peoples’ task-related behavior. One implication is that the affect from the tasks may occur regardless of when a task is completed. The drop in affect was similar when participants completed a single difficult task or when they completed two easy tasks and then a difficult task. Similarly, the affective responses generated by the easy tasks were comparable when they were completed on their own or following a difficult task. Although we did not collect affect ratings immediately after all possible task positions, the single task and sequence data provide evidence in
support of the idea that the affective impacts of the tasks are independent of task position. These same data also suggest that the affective impacts of the hard and easy tasks are unchanged by sequence length, though future studies could test this by having participants complete varying numbers of consecutive tasks.

Another implication involves the role of the easy tasks. When they follow a difficult task, they seem to rebalance affect back to baseline. Rather than having a strong positive impact that is directly opposite the difficult tasks, our data suggest that the easy tasks may have instead served to cleanse the negative impact of the difficult tasks. For example, consider the affective change experienced after each task in a hypothetical EHE sequence (middle panel of figure 4.1 below).

![Hypothetical sequences of affect change](image)

**Figure 4.1.** Hypothetical sequences of affect change. For each task, the bars represent the average affect change produced by that sequence. The final bar in plot represents the average affect change from sequences that ended on that task.

Using the values from the single task study, affect change from these tasks may be approximately 0, -2, and 0, respectively. If these were additive, affect would be 0
after the first task, -2 after the second task, and then end at -2. However, affect after the final easy task was essentially at baseline, suggesting a bounce back up to 0 after a drop in total affect.

These tasks then simultaneously and paradoxically serve as a recent experience with a neutral event, but also a relative affect bump in the positive direction. In this case, the bump could be effectively +2 relative to the previous task, even though the task itself does not increase positive affect by 2 points. Said another way, these neutral tasks may have acted as a form of ‘chaser’ or ‘pallet cleanser’ for the drop in affect after the difficult tasks. The easy tasks may not make you feel better on their own, but they make you feel most recently neutral.

These data may then point to a situation where if a person does a hard task last or by itself, s/he will feel worse than before. But if that same person does an easy task in isolation or at the end, they may not experience a significant change in affect from baseline. In practice, this could involve not only viewing hard tasks as something to complete early, but also reappraising easy tasks as something to save for later. Alternatively, if one only needs to complete a single and complex task, they might consider performing the most difficult element first if possible. Additionally, our data suggest that the simple knowledge that one is finished with a sequence improves both the experience itself and one’s affect in the aftermath. With this in mind, the optimal sequence may be one that ends on an easy task and has a pre-defined endpoint.
However, this may be only effective if participants anticipate a difference based on hard task position and are willing to choose orders that will maximize their affective experience. The data we collected suggest that unfortunately participants neither seem to predict any difference across the orders, nor do many people choose to complete the most difficult task at the end of a sequence. Despite this, there were two bright spots in terms of future behavior. The first is that those in studies 3a and 3b who simply had the most difficult task presented to them first chose to keep this order at a higher rate than those who had it presented later. We also observed that participants who had completed a single task would repeat this in a sequence with two hypothetical ‘easy’ tasks.

These data point to either presentation order (as in Tversky & Kahneman, 1981) or preference for the known as factors that may affect future behavior in this domain. Either case would represent a successful usage of an emotion regulation technique called ‘situation selection’ (Gross, 1998; Gross, 2013; Livingstone & Isaacowitz, 2015). This strategy involves putting oneself in a more desirable situation that can hopefully prevent or dampen negative affect before it occurs. In this case, the negative affect from the hard task is unavoidable. However, individuals can express a preference for a situation where their negative feelings are washed away by subsequent easy tasks rather than potentially linger. Beyond hard tasks, embracing unavoidable negative experiences earlier rather than later may produce emotional benefits, and we hope that the results of this research can be used to improve peoples’ affect and choices in daily life.
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