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The Hidden Costs of Scheduling: Temporal Structure Reduces Task Enjoyment and Contracts Time

Gabriela Nicole Tonietto
Washington University in St. Louis

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WASHINGTON UNIVERSITY IN ST. LOUIS

Olin Business School

Dissertation Examination Committee:
Selin A. Malkoc, Co-Chair
Stephen M. Nowlis, Co-Chair
Cynthia E. Cryder
Joseph K. Goodman
Alan J. Lambert
Robyn A. LeBoeuf

The Hidden Costs of Scheduling: Temporal Structure Reduces Task Enjoyment and Contracts Time
by
Gabriela Nicole Tonietto

A dissertation presented to
The Graduate School
of Washington University in
partial fulfillment of the
requirements for the degree
of Doctor of Philosophy

May 2017
St. Louis, Missouri
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Gabriela Nicole Tonietto

Washington University in St. Louis

May 2017
Dedicated to my parents, grandparents, sister, twin, and nephew.
ABSTRACT OF THE DISSERTATION

The Hidden Costs of Scheduling: Temporal Structure Reduces Task Enjoyment and Contracts Time

by

Gabriela Nicole Tonietto

Doctor of Philosophy in Business Administration

Washington University in St. Louis, 2017

Professor Selin Malkoc, Co-Chair

Professor Stephen Nowlis, Co-Chair

Time is an important but limited resource, and consumers are constantly looking for ways to get more from their time. This has led to the popularity of scheduling as a strategy to help consumers manage and organize their time. Although scheduling is both highly recommended and widely adopted, surprisingly little is known about the psychological effects of scheduling. In this dissertation, I explore the potential effects of scheduling for task enjoyment, perceived time, and time consumption, finding that scheduling may have some important hidden costs.

In the first chapter, I examine the effect of scheduling leisure activities. While prior research has demonstrated many benefits to scheduling in the work domain, the leisure domain has remained unexplored in the literature. I propose that scheduling uniquely undermines the benefits of leisure activities. In particular, I argue that by imposing temporal structure on otherwise free-flowing leisure activities, scheduling can lead leisure to feel more like work and...
reduce both the anticipation and consumption utility for the scheduled activity. In thirteen studies using unambiguous leisure activities that consumers commonly schedule (e.g., movies, a coffee break), I find that scheduling a leisure activity (vs. experiencing it impromptu) makes it feel less free-flowing and more work-like. Furthermore, scheduling diminishes utility from leisure activities, in terms of both excitement in anticipation of the activities and experienced enjoyment. Importantly, I find that maintaining the free-flowing nature of the activity by “roughly scheduling” (without pre-specified times) eliminates this effect, thus indicating that the effect is driven by a detriment from scheduling rather than by a boost from spontaneity. Finally, the effects of scheduling are unique to leisure and do not occur for work activities. Thus, by examining scheduling outside of the work domain, I am able to identify and demonstrate an important detriment to scheduling.

Having examined the effect of scheduling on the individual scheduled tasks, in the second chapter, I next examine the effect of scheduling on the time surrounding scheduled tasks. That is, consumers often organize their time by scheduling some tasks while also leaving some time unaccounted. I examine whether the presence of scheduled tasks systematically influences the perception and ultimate consumption of intervals of unaccounted time. Across nine studies conducted in both the lab and field, I find that bounded intervals (i.e., that end in a scheduled task) feel prospectively shorter than equivalent-length intervals that are unbounded, leading consumers to use this time differently. I propose that this temporal contraction of bounded time is driven by attentional narrowing, whereby salient future tasks loom nearer, making the distance to these tasks feel shorter. In line with this, I find that only terminating (vs. initiating) boundary
tasks that mark the interval endpoint contract time. Finally, in line with the notion that once time feels short it may also feel scarce and insufficient for completing tasks, I find that consumers become less willing to spend their time once it is bounded, forgoing in particular relatively extended (though feasible) and productive tasks in favor of shorter and more easily accomplished tasks. This chapter identifies unique outcomes of scheduling, finding that how consumers organize their tasks impacts not only the scheduled activities, but also consumers’ perceived time and decisions of how to consume their available time throughout the day. My results show that scheduling can inadvertently contract the perception and consumption of unaccounted time.
Chapter 1

The Calendar Mindset: Scheduling Takes the Fun Out and Puts the Work In

1.1 Introduction

Consumers often feel pressed for time as they face conflicting goals that compete for this limited resource (Etkin, Evangelidis, and Aaker 2014). To better manage their time, consumers are often advised to schedule their various activities (Bond and Feather 1988; Kaufman-Scarborough and Lindquist 2003). Consumers seem to have embraced this recommendation, particularly with the advent of smartphones and tablets: 22% of online U.S. adults maintain a calendar on their mobile device (Paul 2011), accessing their calendar five or more times per day (Ahonen 2013). Furthermore, consumers are scheduling not only work activities, which are traditionally scheduled, but also their leisure activities (Robinson and Godbey 1997; Southerton 2003, 2006). A recent Wall Street Journal article (Sovich 2016) argues that scheduling is quickly becoming the default for leisure activities, such that restaurant reservations are made days in

1 The paper based on the first chapter of my dissertation is published in the Journal of Marketing Research:

advance and even off-times for movies sell out with pre-purchased tickets. Although there is reason to believe that scheduling may help consumers take part in more experiences, these changes in consumer behavior prompt an important consideration about the quality of each experience: How does scheduling influence the way leisure activities are construed, evaluated, and experienced?

In this chapter of my dissertation, I examine this question and demonstrate that scheduling a leisure activity (vs. experiencing it impromptu) can have unintended negative consequences. In particular, I suggest that, when scheduled, leisure activities start to feel like work, which decreases the utility consumers obtain in terms of both excitement in anticipation of the activity and experienced enjoyment. This is because scheduling temporally structures otherwise free-flowing leisure activities, making them feel more like work. As such, the decrease in anticipation and consumption utility can be remedied by “roughly scheduling” (i.e., without pre-specified times) in a manner that does not temporally structure leisure activities, thus indicating that the effect is driven by a detriment from scheduling and not by a boost from spontaneity.

It is important to note that I do not suggest that consumers should throw away their calendars and stop scheduling activities. Prior research has established clear benefits for scheduling (Bond and Feather 1988; Milkman et al. 2012), which I do not dispute. I simply suggest that scheduling leisure activities may undermine these benefits and reduce consumers’ utility. In doing so, I examine activities that are distinctly intended as leisure, relatively short (i.e., a few hours), and commonly scheduled by consumers (e.g., movies, ice cream with a friend,
a coffee break) but that may vary in their level of social commitment, external demands, and frequency. I consistently demonstrate that scheduling diminishes utility in terms of both excitement in anticipation of the activity and experienced enjoyment.

My findings make two main contributions. First, scheduling is increasingly prevalent and regularly influences consumer behavior. However, its potential downsides are not well understood. My work is the first to establish the potential negative consequences of scheduling as well as the first to suggest possible remedies to these negative consequences. Thus, my findings have important implications for consumer well-being. Second, my work adds to the literature on how external factors might undermine intrinsic processes. Consumers often have high levels of intrinsic motivation to engage in leisure activities (Choi and Fishbach 2011); prior research has demonstrated that several factors, including external rewards (Deci 1971; Lepper, Greene, and Nisbett 1973) and personal quantification (Etkin 2016), can undermine such intrinsic motivation. I contribute to this literature by showing that scheduling—a behavior that is often self-imposed and well-intentioned—can undermine consumers’ intrinsic motivation, making otherwise fun activities feel like work.

1.2 Theoretical Framework

1.2.1 Impromptu versus Scheduled Leisure

Consumers often divide their time into two important categories: scheduled and impromptu. That is, they schedule several of their activities and also leave some “free” time open for more impromptu activities (Southerton 2003). However, relatively little is known about the
associations consumers may have with these behaviors. Impromptu behavior, often associated with a lack of planning and preparation, is performed on the spur of the moment. Although lay intuition would suggest a positive association between spontaneity and fun, findings by Unger and Kernan (1983) challenge this notion. The authors argue and demonstrate that spontaneity is neither a necessary component of leisure nor a reliable predictor of satisfaction with leisure activities. Thus, the benefits of spontaneity are not perfectly clear, and there may even be potential detriments to impromptu behavior for consumers, who often perceive little spare time in the present (Jhang and Lynch 2015).

In contrast to behaving in an impromptu manner, scheduling involves planning beforehand; to schedule is to plan (an event) to take place at a particular time. Thus, scheduling temporally structures activities by specifically allocating time to designated activities. Specific time allocation (often with the use of schedules and calendars) allows for better accounting of one’s time (Bond and Feather 1988; KaufmanScarborough and Lindquist 2003), aids in time management, and reduces anxiety associated with busyness (KaufmanScarborough and Lindquist 2003; Southerton 2003). Scheduling may also increase the likelihood of engaging in the target activity by serving as an imposed deadline or a pre-commitment tool (Kivetz and Simonson 2002; Milkman et al. 2012; Shu and Gneezy 2010; Wertenbroch 1998). Importantly, however, this line of research has predominately focused on the work domain and has not examined how scheduling might change the perception of and utility from leisure activities.

1.2.2 Scheduling Leisure
Consumers engage in two broad types of activities: work and leisure. I suggest that this distinction is critical in understanding how consumers react to scheduling. Work activities are instrumental in nature and extrinsically motivated (Babin, Darden, and Griffin 1994; Laran and Janiszewski 2011), done out of obligation (Southerton and Tomlinson 2005), and perceived as effortful and chore-like (Choi and Fishbach 2011). These activities can include one’s actual work (i.e., paid work) or one’s chores that are instrumental in achieving personal goals (i.e., unpaid work), both of which are considered unavoidable or necessary (Southerton 2006; Southerton and Tomlinson 2005). Leisure activities, conversely, are those in which a person can do whatever (s)he wants as opposed to what (s)he must do; these are, by definition, enjoyable. Leisure activities are noninstrumental and intrinsically motivated (Babin, Darden, and Griffin 1994; Laran and Janiszewski 2011; Unger and Kernan 1983), viewed as nonproductive use of time (Veblen [1899] 1979, p. 43), and marked by the pursuit of pleasure and opportunities to have fun (Keinan and Kivetz 2011).

Importantly, consumers perceive and experience time differently when engaged in work versus leisure activities. In particular, consumers have a close association between subjective time progression and fun, exemplified by the common lay belief that “time flies when you’re having fun” (Conti 2001; Gable and Poole 2012; Sackett et al. 2010). When time passes quickly, consumers tend to evaluate activities as more fun (Sackett et al. 2010); conversely, when activities are evaluated as more fun, time is perceived as passing more quickly (Gable and Poole 2012). Relatedly, consumers who are intrinsically (vs. extrinsically) motivated to complete a task do not pay as much attention to time, leading the activity to feel free-flowing (Conti 2001). This
association is well-founded, as most leisure activities are flexible and unstructured, whereas work tasks often have pre-specified start and/or completion times (Bird and Ross 1993; Conti 2000). Note that while not all leisure activities are inherently unstructured (e.g., a yoga class or a movie starts at a particular time), the perception of flexibility and flow exist for most intrinsically motivated leisure activities (Conti 2001). If consumers perceive leisure activities to be free-flowing, then one would expect scheduling, which imposes a temporal structure (i.e., specific times to start and/or complete the task), to make leisure activities feel less free-flowing and thus more work-like. As such, I predict a detriment from scheduling and not a boost from impromptu activities. This is consistent with recent work demonstrating that quantification of leisure activities can change how work-like they feel (Etkin 2016).

1.2.3 When Leisure Becomes Work: The Effect on Utility

If scheduled leisure activities take on work-like qualities, this would likely have important downstream consequences. Research to date examining how work versus leisure activities are evaluated has established that work activities are associated with more negative experiences and evaluations than tasks performed for leisure (Choi and Fishbach 2011; Fishbach, Shah, and Kruglanski 2004; Higgins and Trope 1990; Laran and Janiszewski 2011). This research manipulated the framing (i.e., work or fun) of activities that cannot be clearly classified as work or leisure. For instance, reading can feel effortful, chore-like (Choi and Fishbach 2011), and depleting (Laran and Janiszewski 2011) if done to achieve a work goal (e.g., study), but it may be experienced as purely enjoyable if performed for leisure. If so, one would expect tasks
that are construed as work-like to have diminished utility—both from anticipation as well as from actual consumption. However, unlike the prior research demonstrating how work versus leisure goals alter the experience of an ambiguous activity, I argue that a subtle manipulation (i.e., scheduling) of an unambiguous leisure activity can make the activity feel more like work and decrease utility. In doing so, I examine utility both from anticipation and from consumption. That is, I explore how excited (vs. more reluctant or resentful) consumers feel in anticipation of the activity as well as how much they enjoy the activity once it is actually consumed. I suggest that both sources of utility can be diminished for scheduled leisure.

Next, I report results from 13 studies using a host of domains in the lab and in the field. Together, my results provide support for the detrimental effect of scheduling on how leisure activities are anticipated and experienced. In particular, I demonstrate that (1) when leisure activities are scheduled, they take on qualities of work, leading to lower utility; (2) this effect is observed only when the scheduling is specific (vs. rough or absent); and (3) this effect is unique to leisure (vs. work) activities. Study 1 (and six additional supplemental studies) establishes that scheduling leisure activities leads them to take on work-like qualities, while Study 2 shows that even an impromptu activity can feel like work if it is temporally structured (i.e., partitioned into temporal segments). Study 3 establishes that the difference in utility for scheduled versus impromptu activities is driven by an imposition of temporal structure by demonstrating that roughly planning (without predetermined times) does not lead to the detrimental effect of scheduling for anticipation utility. Study 4 demonstrates that setting only a start time is enough structure to lead to the effect of scheduling, and Study 5 shows that scheduling uniquely affects
leisure and not work activities. Finally, Studies 6a and 6b test the effect of scheduling on consumption utility. I find that scheduling to watch a fun video (vs. watching it impromptu) leads to greater work construal and decreases enjoyment (Study 6a) and that students enjoy a coffee break less if they specifically (vs. roughly) scheduled their break (Study 6b). Although each study isolates a single important aspect of my conceptual framework, they collectively support the proposition that scheduling leisure activities can infuse them with work-like qualities and decrease utility.

1.3 Study 1: Effect of Scheduling on Work Qualities

The purpose of Study 1 is to examine whether scheduled leisure activities take on work-like qualities. I first conducted a pretest to identify appropriate measures to gauge the qualities of work. I asked 52 undergraduate students to define work in their own words and provide examples of work activities. Almost half (44%) of participants defined work in terms of required effort/energy, 15% defined work as obligatory (e.g., “obligation,” “must be done”), and 19% provided chores as an example of work. These findings are consistent with the literature (Choi and Fishbach 2011; Southerton and Tomlinson 2005; Warren 2011), which has consistently defined work as effortful, necessary, unavoidable, and chore-like. As such, in the ensuing studies I measure work by using a varying subset of the following items: “effortful,” “chore,” “obligation,” “commitment,” “constraining,” and “work.” In the main experiment, I provided participants with a fictitious schedule for the week. Half imagined scheduling a leisure activity in
advance, while the other half imagined engaging in the same activity impromptu. All participants indicated how they would feel about this activity immediately before it took place.

1.3.1 Method and Procedure

Sixty-eight undergraduate students took part in this two-cell (scheduled vs. impromptu) study. All participants were given a calendar filled with classes and extracurricular activities (see Appendix 1.1) and were asked to imagine that this was their actual schedule for the week. Those in the scheduled condition first made plans to get frozen yogurt with a friend two days in advance and added the plans to their hypothetical calendar. Next, they completed a set of filler questions about their week. Finally, they were asked to imagine that it was now right before their get-together, and they rated the extent to which the activity felt like work (“commitment,” “chore”; \( \alpha = .61 \)) on nine-point scales (1 = “not at all,” and 9 = “extremely”). Those in the impromptu condition imagined running into a friend and deciding to get frozen yogurt together immediately and rated the activity on the same items. In both conditions, the time and date for the activity was the same.

1.3.2 Results

As predicted, those who scheduled getting frozen yogurt construed it more like work (M = 5.04) than those in the impromptu condition (M = 3.44; \( t(66) = 4.06, p < .01 \)). Examining each of the measures independently led to the same conclusions: scheduling increased ratings of the commitment and chore items (\( M_{\text{commitment}} = 6.06, M_{\text{chore}} = 4.03 \)) compared with experiencing it
Impromptu (Mcommitment = 4.03, t(66) = 4.22, p < .01; Mchore = 2.85, t(66) = 2.48, p < .05). This study provides initial evidence that scheduling leads leisure activities to take on qualities of work.

1.3.3 Discussion and Studies 1b–1g

The finding from Study 1a, while compelling, leaves many questions unanswered. For instance, would the effect hold if the calendar provided were not as busy, or even if it were completely free? What if the event were recurring, had externally imposed timetables, or were a special occasion—would these factors eliminate the effect? Similarly, would the effect persist if the task were not initiated by someone else and instead were either self-initiated or even solitary?

To rule out these alternatives, test for robustness, and better understand the conditions under which the effect unfolds, I conducted a series of strategic replications (for details, see Supplemental Studies 1.1–1.6). In Supplemental Study 1.1, I find that the effect of scheduling (vs. impromptu) leisure on work construal holds even when the calendar shown to participants is completely free (Mscheduled = 3.31, Mimpromptu = 2.15; t(58) = 2.15, p < .05), suggesting that perceived busyness in the scheduling conditions does not drive the results. I further find that the effect is robust to activities that are recurring (i.e., take place every week, rather than once; Supplemental Study 1.2: Mscheduled = 3.64, Mimpromptu = 3.10; t(107) = 2.16, p < .05); to activities with externally imposed timetables (i.e., intramural volleyball game; Supplemental Study 1.3: Mscheduled = 4.11, Mimpromptu = 3.25; t(111) = 3.34, p < .01); and even to rare, special events (i.e., a special movie preview where the star actor and director sign autographs; Supplemental Study
1.4: $M_{\text{scheduled}} = 3.47, M_{\text{impromptu}} = 2.53; t(73) = 2.35, p < .05$), indicating that the results are not driven by degree of predictability and are robust to differences in the nature of the leisure task. Perhaps more importantly, the results were replicated when the activity was initiated by the participants (rather than their friends, as in my previous studies; Supplemental Study 1.5: $M_{\text{scheduled}} = 4.17, M_{\text{impromptu}} = 3.42; t(74) = 2.11, p < .05$) or was completed alone (Supplemental Study 1.6: $M_{\text{scheduled}} = 3.67, M_{\text{impromptu}} = 2.61; t(77) = 2.57, p < .05$). Thus, the effect of scheduling on the work construal of leisure activities is robust to the removal of social considerations, in rejection of the notion that the effect was simply due to an increased sense of social commitment or obligation. Taken together, I find that scheduling leisure increases work construal when the calendar is busy (Study 1) or not busy (Supplemental Study 1.1), as well as when the leisure activity is recurring (Supplemental Study 1.2), occurs on an external timetable (Supplemental Study 1.3), is rather special (Supplemental Study 1.4), is with a friend (Study 1), is solitary (Supplemental Study 1.6), or is self- or friend-initiated (Supplemental Study 1.5). These findings (see Table 1.1, Panel A) help establish that scheduling leisure activities leads such activities to take on qualities of work.

Note that in these studies I used a combination of items such as “effortful,” “chore,” “obligation,” “commitment,” “constraining,” and “like work” to measure work construal. As such, one might wonder whether the effect of scheduling captures changes in obligation and commitment rather than work construal. To examine this alternative, I re-conducted analyses without these two items where possible. For six out of seven studies, the results were statistically unaltered when these items were excluded (see Table 1.1, Panel B). Furthermore, using
standardized scores of work construal (that excluded obligation and commitment items) to conduct a meta-analysis across the five two-cell design studies results in a strong effect on this reduced set of measures (M_{scheduled} = .22, M_{impromptu} = −.21, p < .001). Taken together, I find that the effect of scheduling on work construal holds in the absence of these items, demonstrating that the work measure captures more than mere commitment. Thus far, I have shown that scheduling leisure activities makes them feel more like work. I suggest that scheduling does so by imposing temporal structure. If this is the case, then imposing temporal structure even on impromptu leisure tasks should likewise increase work construal. I test this possibility next.

**TABLE 1.1 – SUMMARY OF CHAPTER 1 RESULTS**

<table>
<thead>
<tr>
<th>Panel A: Results for Work Construal Measure</th>
<th>Work measure</th>
<th>Scheduled</th>
<th>Impromptu</th>
<th>Start time scheduled</th>
<th>Activity</th>
<th>Additional takeaways</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a Chore, commitment</td>
<td>5.04</td>
<td>3.44***</td>
<td></td>
<td></td>
<td>Frozen yogurt</td>
<td></td>
</tr>
<tr>
<td>1b Obligation, commitment</td>
<td>3.31</td>
<td>2.15**</td>
<td></td>
<td></td>
<td>Movie</td>
<td>Robustness check: free calendar</td>
</tr>
<tr>
<td>1c Chore, obligation, effortful</td>
<td>3.64</td>
<td>3.10**</td>
<td></td>
<td></td>
<td>Frozen yogurt</td>
<td>Recurring activity</td>
</tr>
<tr>
<td>1d Chore, effortful, work</td>
<td>4.11</td>
<td>3.25**</td>
<td></td>
<td></td>
<td>Volleyball</td>
<td>Robustness check: structured activity</td>
</tr>
<tr>
<td>1e Chore, obligation</td>
<td>3.47</td>
<td>2.53**</td>
<td></td>
<td></td>
<td>Movie</td>
<td>Robustness check: special occasion</td>
</tr>
<tr>
<td>1f Chore, obligation, commitment</td>
<td>4.17</td>
<td>3.42**</td>
<td></td>
<td></td>
<td>Movie</td>
<td>Robustness check: self-initiated activity</td>
</tr>
<tr>
<td>1g Chore, obligation, commitment</td>
<td>3.67</td>
<td>2.61**</td>
<td></td>
<td></td>
<td>Movie</td>
<td>Robustness check: solitary activity</td>
</tr>
<tr>
<td>2 Chore, effortful, work</td>
<td>Control: 3.10</td>
<td>2.30**</td>
<td>Structured: 3.10</td>
<td></td>
<td>Forest Preserve</td>
<td>Moderator: temporal structure</td>
</tr>
<tr>
<td>3 Chore, effortful, work</td>
<td>3.30</td>
<td>2.43***</td>
<td>2.95</td>
<td></td>
<td>Frisbee</td>
<td>Mediator: free-flow</td>
</tr>
<tr>
<td>6a Work–fun</td>
<td>5.24</td>
<td>5.64**</td>
<td></td>
<td></td>
<td>Video</td>
<td></td>
</tr>
</tbody>
</table>

**Panel B: Results for Work Construal Measure Excluding Commitment and Obligation**

<table>
<thead>
<tr>
<th>Work measure</th>
<th>Scheduled</th>
<th>Impromptu</th>
<th>Start time scheduled</th>
<th>Roughly scheduled</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Task Description</td>
<td>Score 1</td>
<td>Score 2</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>----------------------</td>
<td>---------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>1a</td>
<td>Chore</td>
<td>4.03</td>
<td>2.85**</td>
<td></td>
</tr>
<tr>
<td>1c</td>
<td>Chore, effortful</td>
<td>3.38</td>
<td>2.93*</td>
<td></td>
</tr>
<tr>
<td>1e</td>
<td>Chore</td>
<td>3.18</td>
<td>2.14**</td>
<td></td>
</tr>
<tr>
<td>1f</td>
<td>Chore</td>
<td>2.84</td>
<td>2.55</td>
<td></td>
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<tr>
<td>1g</td>
<td>Chore</td>
<td>4.29</td>
<td>3.31**</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Chore, effortful</td>
<td>Test drive: 3.68</td>
<td>Test drive: 2.51**</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Car wash: 4.63</td>
<td>Car wash: 4.18</td>
<td></td>
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</table>
### Panel C: Results for Utility Measure

<table>
<thead>
<tr>
<th>Utility measure</th>
<th>Scheduled</th>
<th>Impromptu</th>
<th>Start time scheduled</th>
<th>Roughly scheduled</th>
<th>Activity</th>
<th>Additional takeaway</th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>4.92</td>
<td>5.42***</td>
<td></td>
<td>5.28**</td>
<td>Froyo</td>
<td>Moderator: roughly scheduling</td>
</tr>
<tr>
<td>4</td>
<td>4.51</td>
<td>5.20***</td>
<td>4.84</td>
<td></td>
<td>Frisbee</td>
<td>Mediators: free-flow, work</td>
</tr>
<tr>
<td>5</td>
<td>Leisure: 4.97</td>
<td>Leisure: 5.60***</td>
<td>Leisure: 5.60***</td>
<td>Leisure: 5.60***</td>
<td>Leisure: 5.60***</td>
<td>Leisure: test drive Work: car wash</td>
</tr>
<tr>
<td>6a</td>
<td>Enjoyment</td>
<td>5.43</td>
<td>5.83**</td>
<td></td>
<td>Video</td>
<td>Moderator: task type</td>
</tr>
<tr>
<td>6b</td>
<td>6.48</td>
<td></td>
<td></td>
<td>7.57***</td>
<td>Coffee break</td>
<td></td>
</tr>
</tbody>
</table>

*p < .10; **p < .05; ***p < .00; Significance reported compared to scheduled condition

*b This section only reports studies that originally used commitment and obligation

*b Studies measuring Anticipation utility used the following items: Excited, thrilled, looking forward, reluctant, unenthusiastic, resentful

*c Reverse-scored

### 1.4 Study 2: Temporally Structuring Impromptu Leisure

Study 2 tests whether temporally structuring even an impromptu activity by partitioning it into temporal segments can lead the activity to feel more like work, even in the absence of a priori scheduling. If so, this would support the notion that temporal structure drives the effect of scheduling. Put differently, temporally structuring a leisure activity by either partitioning it into temporal segments or scheduling it should make it feel more like work by reducing perceived free-flow. To test whether my partitioning manipulation indeed influenced perceived free-flow, I asked 62 participants to rate a leisure activity that was (vs. was not) temporally structured on two seven-point scales (1 = “very rigid,” and 7 = “very free-flowing”; 1= “very restrictive,” and 7 = “very flexible”; α = .93). As expected, once partitioned into temporal segments, the activity felt less free-flowing (M_{structured} = 3.28, M_{control} = 4.56; t(60) = 3.49, p < .01).
1.4.1 Method and Procedure

Two hundred one Amazon Mechanical Turk (MTurk) workers participated in this 2 (scheduled vs. impromptu) × 2 (control vs. structured) between-subjects study. Participants were shown a weekend calendar (see Appendix 1.2). Those in the scheduled conditions imagined that it was Saturday morning and that they decided to go to the forest preserve with friends on Sunday at 12:00 P.M. Those in the impromptu conditions imagined that it was 11:00 A.M. on Sunday morning and that they made the same plans to be acted on in one hour. Regardless of the assigned scheduling condition, all participants in the control conditions were told the start time for the activity (i.e., noon) and read that “there are several activities to take part in [at the forest preserve]. Based on availability, you will try to sign up for two activities and have a picnic in between.” Those in the structured conditions received more information regarding the timing of various activities and were told that “there are several activities to take part in [at the forest preserve], some taking place from 12:30 P.M. to 2:00 P.M. and others from 3:00 P.M. to 4:30 P.M. Based on availability, you will try to sign up for an activity for each time slot once you get there, leaving 2:00 P.M. to 3:00 P.M. to have a picnic for an hour in between.” Finally, I measured work construal by having participants rate the extent to which the activity felt like a chore, like work, and effortful to do (α = .92).

1.4.2 Results and Discussion

A 2 (temporal structure) × 2 (scheduling) analysis of variance produced a significant main effect of temporal structure (F(1, 197) = 4.07, p < .05) such that, overall, structuring the
experience led to greater work construal (M = 3.21) than not imposing such temporal structure (M = 2.70). There was no significant main effect of scheduling (F(1, 197) = 1.28, p > .10).

Importantly, I found the predicted temporal structure by scheduling interaction (F(1, 197) = 4.19, p < .05; see Figure 1.1). In the control condition, scheduling the leisure activity led it to feel more work-like (M = 3.10) than when it was impromptu (M = 2.30; t(197) = 2.26, p < .05). No such difference emerged for those in the temporal structure condition (M_{scheduled} = 3.10, M_{impromptu} = 3.33; t(197) < 1). Importantly, I observed the effect of temporal structure for those participants in the impromptu (t(197) = 2.87, p < .01) conditions but not for those in the scheduled conditions (t(197) < 1). This effect is noteworthy, as it establishes that when the event is already scheduled and thus is temporally structured, additional structuring does not have a further effect. However, when an impromptu task is structured, it feels more like a scheduled task.

FIGURE 1.1 – STUDY 2 RESULTS

Study 2 demonstrates that temporal structuring underlies the effect of scheduling. In particular, I find that increasing the structure in how time will be allocated increases the work construal of leisure activities. Importantly, this additional structure moderates the effect of scheduling such that the impromptu condition becomes just as work-like as the scheduled
condition under increased temporal structure. Thus, Study 2 demonstrates that imposing structure and reducing the free-flowing nature of leisure activities by either scheduling or temporally partitioning the activity leads to greater work construal. If temporally structuring impromptu activities makes them feel like work, then one would expect unstructured scheduling (i.e., without specifically allocating one’s time) of leisure activities to behave similarly to impromptu leisure. That is, the negative effect of scheduling should occur only when the scheduling is relatively structured (with specific time allocation) and not when scheduling is rough (without specific time allocation). I examine this issue next while studying the consequences of scheduling for anticipation utility.

1.5 Study 3: Specific versus Rough Scheduling

To test whether rough scheduling moderates the effect of scheduling, in Study 3 I introduced an additional condition in which participants roughly scheduled (i.e., without setting specific start or end times) a leisure activity ahead of time. I expected that only specific scheduling—and not just any plan—would decrease anticipation utility. As before, I first tested whether the rough scheduling manipulation indeed felt more free-flowing than specific scheduling. One hundred MTurk workers imagined seeing a movie with a friend that took place impromptu, after specific scheduling, or after rough scheduling. All participants rated the activity on the same free-flow measures as before. I found that specific scheduling (M = 3.83) led the activity to feel less free-flowing than when it was impromptu (M = 5.19, t(97) = −3.45, p < .01)
or roughly scheduled (M = 4.76, t(97) = −2.44, \( p < .05 \)). The impromptu and roughly scheduled conditions did not differ from each other (t(97) = 1.13, \( p > .10 \)).

### 1.5.1 Method and Procedure

One hundred sixty-three undergraduates took part in this study. I compared the anticipation utility of getting frozen yogurt with a friend when the outing was specifically scheduled (i.e., with set times), roughly scheduled (i.e., no set time), or impromptu. All participants were provided with a two-day calendar (see Appendix 1.3) and were asked to imagine that it was their actual calendar for Monday and Tuesday. Participants in the specific scheduling condition imagined that it was Monday morning and that they made plans to get frozen yogurt with a friend at 4:00 P.M. Tuesday afternoon. Participants were then instructed to add the plan to their calendar. In the rough scheduling condition, participants imagined that it was Monday morning and that they made a plan with a friend to get frozen yogurt sometime during a gap of a few hours on their calendar between their last class and a meeting (for exact instructions, see Appendix 1.4). They were then instructed to add this rough plan to their calendar (participants engaged in multiple behaviors including writing question marks, shading a large area of the calendar, and drawing arrows outside of the calendar). Thus, in both scheduling conditions (specific and rough), participants themselves marked their plans on their hypothetical calendar. Finally, participants in the impromptu condition imagined that as they left class Tuesday at 4:00 P.M., they ran into a friend and decided to get frozen yogurt immediately. Drawing on conceptualizations of anticipation utility from prior research (Loewenstein 1987;
Rottenstreich and Hsee 2001), I used a series of anticipatory emotions to capture anticipation utility. Participants rated the extent to which they felt three negative (“resentful,” “unenthusiastic,” “reluctant”) and three positive (“excited,” “thrilled,” “looking forward to it”) emotions in anticipation of the activity.

1.5.2 Results and Discussion

Because all the emotion items were highly reliable ($\alpha = .78$), I combined them into an index measure by reverse coding the negative emotions. Using this index as the dependent variable, I found a significant effect of scheduling type ($F(2, 160) = 5.07, p < .01$). Planned contrasts showed that participants who specifically scheduled this get-together had lower anticipation utility ($M = 4.92$) compared with those who roughly scheduled it ($M = 5.28$; $t(160) = -2.24, p < .05$) or decided impromptu ($M = 5.42$; $t(160) = -3.09, p < .01$). Importantly, the rough scheduling and impromptu conditions did not differ ($t(160) < 1$).

Study 3 provides evidence that temporal structure drives the effect of scheduling on anticipation utility. I find that specifically scheduling a leisure activity had a unique dampening effect on the anticipation utility for the activity, such that participants were less excited in anticipation of a specifically scheduled leisure activity. However, when the scheduling is rough, without pre-allocated times, anticipation utility of the activity is as positive as when the activity is impromptu, and significantly greater than when it is specifically scheduled. Furthermore, this result shows that the lower utility following specific scheduling is not due to a boost from
spontaneity but instead due to a detriment from scheduling, as neither the specific nor the rough scheduling conditions had a spontaneous component. Nonetheless, when consumers schedule their leisure in a specific manner, I find a reduction in utility even compared with this nonspontaneous rough scheduling condition. This effect occurs because roughly scheduling, unlike specific scheduling, maintains the perceived free-flowing nature of the activity, as the pretest confirms. However, I have not yet directly tested the role of perceived free-flow, an issue I address next.

1.6 Study 4: Setting Start Times is Enough Structure

The purpose of Study 4 was twofold. First, I aimed to delve further into the aspects of scheduling that are vital to increasing the temporal structure of the activity. Studies thus far have operationalized scheduling by setting both start and end times for the activity. Thus, it is not clear whether setting only start times would provide enough structure to find the negative effect of scheduling. I test this possibility by adding a third condition in which participants scheduled only a start time for the activity. Second, I also examined the role of perceived free-flow by including measures of free-flow in addition to measures of work construal and anticipation utility.

1.6.1 Method and Procedure
One hundred forty-one undergraduates took part in this three-cell (start and end times vs. start time only vs. impromptu) between-subjects study. All participants were given a three-day calendar (see Appendix 1.5) and were asked to imagine that this was their actual schedule for the next few days. Participants in the start and end times scheduling condition imagined that it was Monday morning and that they made plans to play Frisbee with friends Wednesday afternoon from 4:30 to 6:30 P.M. Participants were asked to add the plan to their calendar. In the start time–only scheduling condition, participants imagined that it was Monday morning and that they made plans to play Frisbee with friends Wednesday afternoon from 4:30 P.M. onward (without setting an end time for the activity—see Appendix 1.6). They were then instructed to add this plan to their calendar (participants engaged in multiple behaviors, including blocking off time, shading the start time and drawing arrows, etc.). Finally, participants in the impromptu condition imagined that as they left class Wednesday at 4:00 P.M., they decided to play Frisbee with friends, quickly got ready, and headed there. First, participants indicated work construal of the activity ("effortful," “like a chore,” “like work”; $\alpha = .90$), followed by anticipation utility using the same emotion items as in Study 3 ($\alpha = .90$). Finally, all participants rated the extent to which going from class to play Frisbee felt flexible and free-flowing ($\alpha = .90$) on seven-point scales (1 = “not at all,” and 7 = “to a great extent”).

1.6.2 Results

*Free-flowing.* I found a significant effect of scheduling condition ($F(2, 138) = 5.83, p < .01$). In particular, participants who scheduled both start and end times ($M = 3.90$) felt that the
activity was less free-flowing compared with those who decided impromptu ($M = 4.81$; $t(138) = -3.09$, $p < .01$). Furthermore, those who scheduled only a start time ($M = 3.99$) also felt that the activity was less free-flowing compared with the impromptu condition ($t(138) = -2.80$, $p < .01$). The two scheduling conditions did not differ from each other ($t(138) < 1$). Thus, setting only a start time was enough to disrupt the perceived free-flow.

**Work construal.** I also found a significant effect of scheduling condition ($F(2, 138) = 4.35$, $p < .05$), whereby participants who scheduled both start and end times ($M = 3.30$) felt that the activity was more like work compared with those who decided impromptu ($M = 2.43$, $t(138) = 2.93$, $p < .01$). Furthermore, those who scheduled only a start time ($M = 2.95$) also felt that the activity was (marginally) more work-like compared with those in the impromptu condition ($t(138) = 1.75$, $p < .10$). The two scheduling conditions did not differ from each other ($t(138) = -1.18$, $p > .10$) such that both led playing Frisbee to feel more like work compared with engaging in the activity impromptu.

Next, I examined whether changes in work construal operated through perceptions of free-flow using bootstrapped mediation with 5,000 samples. I first contrast coded scheduling conditions into two contrasts (C1: start and end = −1, start only = −1, impromptu = 2; C2: start and end = 1, start only = −1, impromptu = 0). I found a significant indirect effect of the scheduling C1 contrast on work construal that operated through perceived free-flow (95% confidence interval [CI] = [−.183, −.040]; for full regression results, see Figure 1.2, Panel A). Thus, scheduling a start time or both start and end times led the activity to feel less free-flowing, which then increased the work construal of the activity.
Anticipation utility. Replicating Study 3, I found a significant effect of scheduling condition on anticipation utility (F(2, 138) = 4.01, p < .05). In particular, participants who scheduled both start and end times (M = 4.51) had lower anticipation utility than those who decided impromptu (M = 5.20; t(138) = −2.83, p < .01). Those who scheduled only a start time (M = 4.84) fell in between the other two conditions, though neither difference reached significance (impromptu: t(138) = −1.49, p > .10; start and end: t(138) = 1.34, p > .10).

Next, I examined whether the effect of scheduling on anticipation utility operated through work construal and perceptions of free-flow. A mediation analysis (Hayes 2012, Model 6, 5,000 bootstrapped samples) produced a significant indirect effect of scheduling C1 contrast through perceived free-flow and work construal (95% CI = [.022, .107]; Figure 1.2, Panel B). That is, scheduling reduced anticipation utility by disrupting the free-flowing nature of the leisure activity, which then led the activity to feel more like work.

FIGURE 1.2 – STUDY 4 MEDIATION RESULTS

Panel A: Mediation of Work Construal

- Scheduling → Free-Flowing
  - β = 0.29**
  - β = -0.14 (β = -0.23**)
  - [CI: -.183, -.040]

- Free-Flowing → Work
  - β = -0.33**
1.6.3 Discussion

This study demonstrates that setting only a start time (compared with setting both start and end times) is enough structure to reduce the flexibility and free-flowing nature of leisure activities. I also found support for a serial mediation. That is, I demonstrate that either type of scheduling (vs. impromptu) leads the activity to feel less free-flowing, which then makes the activity feel more like work, which then reduces anticipation utility. Note that such a mediation model cannot differentiate whether work construal or utility come first in the causal framework. That is, it is also possible for utility to feed into work construal or work and utility to operate as simultaneous, rather than sequential, outcomes of scheduling. Although I cannot statistically isolate the specifics of the causal chain, my results nonetheless establish that scheduling (by setting a start time only or a start and an end time) chips away from the anticipation utility of the task, makes it feel like work, and decreases its perceived free-flow.

1.7 Study 5: Scheduling Work Tasks
If the structuring effect of scheduling only influences activities that tend to feel free-flowing, one should not expect scheduling to alter the construal and utility of work activities, which are already associated with temporal structure and are generally not perceived to be free-flowing (Conti 2000). I examine this issue by manipulating the type of task in addition to scheduling.

1.7.1 Method and Procedure

Two hundred twenty-eight MTurk workers participated in this 2 (task: work vs. leisure) × 2 (scheduled vs. impromptu) between-subjects study. Participants were shown a weekend calendar similar to prior studies. Those in the scheduled conditions imagined that it was Saturday morning and that they decided to either get their car washed (work task) or test drive a car (leisure task) on Sunday at 3:30 P.M. Those in the impromptu conditions imagined that it was 3:00 P.M. on Sunday afternoon and they made the same plans to be acted on in half an hour. In addition to the emotion items (α = .88) used previously to assess anticipation utility, I added an additional overall evaluation measure (seven-point scale: 1 = “can’t wait to go,” and 7 = “wish I could cancel”). Finally, I measured work construal (“chore,” “obligation,” “effortful to do”; α = .80).

1.7.2 Results

Work construal. My analysis found a significant main effect of task type (F(1, 224) = 74.91, p < .01) such that the car wash (M = 4.73) was construed more like work than the test
drive (M = 3.21), confirming that the task type manipulation was successful. There was also a significant main effect of scheduling (F(1, 224) = 16.27, p < .01), such that those who scheduled (M = 4.33) construed the task to be more like work than those who did not schedule (M = 3.62). These main effects were qualified by the predicted task × scheduling interaction (F(1, 224) = 4.53, p < .05; see Figure 1.3, Panel A). That is, when considering a leisure task, those who scheduled construed the task as more work-like (M = 3.75) than those who engaged in the task impromptu (M = 2.67; t(224) = 4.36, p < .01). No such difference emerged for those who evaluated the work task (M_{scheduled} = 4.90; M_{impromptu} = 4.57; t(224) = 1.35, p > .10).

**FIGURE 1.3 – STUDY 5 RESULTS**

Panel A: Task Type by Scheduling on Work Construal

Panel B: Task Type by Scheduling on Anticipatory Emotions
**Anticipation utility.** Examining the emotions index, I found a main effect of task type (F(1, 224) = 55.13, p < .01) such that those who considered the car wash (M = 4.01) expressed significantly lower anticipation utility than those who considered the test drive (M = 5.28). There was also a marginally significant main effect of scheduling (F(1, 224) = 3.22, p = .07) such that those who scheduled (M = 4.49) felt less positively about the task than those who did not schedule (M = 4.80). These main effects were qualified by a (marginal) interaction (F(1, 224) = 2.96, p = .06; see Figure 1.3, Panel B). When considering a leisure task, those who scheduled (M = 4.97) had lower anticipation utility than those who engaged in the task impromptu (M = 5.60; t(224) = −2.60, p = .01). Furthermore, no such difference emerged for those who considered a work task (M_{scheduled} = 4.02; M_{impromptu} = 4.00; t(224) < 1).

To examine whether the effect of scheduling on anticipation utility operated through work construal, I ran a moderated mediation analysis (5,000 samples). I found a significant indirect effect of the interaction on anticipatory emotions that operated through work construal (95% CI = [−.210, −.009]; see Figure 1.4, Panel A for regression results). Further analyses revealed that while work construal mediated the effect of scheduling on anticipation utility for
the leisure activity (95% CI = [−.484, −.144]), this was not the case for the work task (95% CI = [−.213, .021]).

Next, looking at the overall evaluation, I found a significant main effect for task type (F(1, 224) = 15.29, p < .01) such that desire to cancel was greater for the car wash (M = 3.94) than the test drive (M = 3.06). There was also a significant main effect of scheduling (F(1, 224) = 8.37, p < .01) such that those who scheduled (M = 3.83) expressed greater desire to cancel than those who did not schedule (M = 3.18). These main effects were qualified by a (marginal) interaction (F(1, 224) = 2.96, p = .09; see Figure 1.3, Panel C). When considering a leisure task, those who scheduled (M = 3.58) expressed greater desire to cancel than those who engaged in the task impromptu (M = 2.54; t(224) = 3.26, p < .01). No such difference emerged for those who considered a work task (M_{scheduled} = 4.07; M_{impromptu} = 3.81; t(224) < 1).

Testing for moderated mediation (5,000 bootstrapped samples), I found a significant indirect effect of the interaction on desire to cancel that operated through work construal (95% CI = [.012, .260]; see Figure 1.4, Panel B for regression results). Further analyses showed that although work construal mediated the effect of scheduling on overall evaluation for the leisure activity (95% CI = [.180, .608]), this was not the case for the work task (95% CI = [−.024, .264]).
1.7.3 Discussion

In Study 5, I find that scheduling has a unique dampening effect on leisure activities. This is because scheduling only affects activities that are generally perceived as free-flowing (i.e., leisure). For tasks often associated with temporal structure and specific time allocation (e.g., work activities), scheduling does not alter their degree of work construal or the utility consumers gain in anticipation of the activities. In addition, I find that scheduling reduces anticipation utility
through increased work construal, but only for leisure (vs. work) tasks. Taken together, the studies so far provide evidence for my proposed effect. Next, I demonstrate that the results are not limited to anticipation and indeed extend to consumption utility.

1.8 Studies 6a-6b: Non-hypothetical Activities

All of the studies thus far have used a prospective, hypothetical design and measured anticipation utility. Thus, one may wonder whether the observed effect would extend to consumption utility. To address this possibility, I explore the enjoyment from consuming leisure activities that were specifically scheduled compared with impromptu (6a) or roughly scheduled (6b), finding that consumers who specifically schedule a leisure activity experience lower consumption enjoyment.

1.8.1 Study 6a

Method and procedure. I recruited 160 MTurk workers to watch and evaluate a ten-minute entertaining video and then randomly assigned them to either a scheduled or an impromptu condition. All participants were first provided with a list of ten popular (i.e., more than a million views on YouTube), entertaining videos (e.g., a clip from Whose Line Is It Anyway?) and were instructed to select the video that they thought would be the most fun and entertaining for them to watch. Given that the task was a “Human Intelligence Task” (HIT) posted for MTurk workers, to confirm that the task actually felt like a fun leisure activity, I ran a pretest with a separate group of 83 workers who were recruited using the same description and
who chose to watch a video from the same list provided in the main study. After watching the
video, participants rated the task on two scales assessing the degree to which this was a
work/leisure task (“Having completed this HIT, was it more like work or leisure?” 1 = “more
like work, and 7 = “more like leisure”) and how fun this task was compared with other MTurk
HITs (“Compared to other HITs, was this HIT more or less fun?” 1 = “much less fun,” and 7 =
“much more fun”). I found that participants overwhelmingly considered the task more like
leisure (M = 6.12, t(82) = 14.74, p < .01, compared with scale midpoint) and much more fun than
other MTurk HITs (M = 6.47, t(82) = 20.94, p < .01, compared with scale midpoint), indicating
that this was indeed a fun leisure task for them.

Following the choice task, participants in the impromptu condition then watched their
chosen video immediately and answered questions about their viewing experience. Those in the
scheduled condition instead chose a specific day and time to watch their chosen video and added
this plan to their calendar. To keep the time of day roughly constant between impromptu and
scheduled conditions, participants scheduled (on their calendar or planner) the activity over the
next couple of days during approximately the same time frame as the impromptu condition took
place (between 9 A.M. and 12 P.M.). After participants indicated the day and time they
scheduled to watch the video, they were asked to return at their determined time to do so. On the
day each participant scheduled the task, I sent a reminder e-mail (akin to getting a reminder for
scheduled tasks on one’s computer or phone). Importantly, when participants in the scheduled
condition returned to watch their chosen video, I used mild language to avoid evoking any
negative associations, referring to the activity as their “chosen video” and the time as “set” rather
than as “scheduled.” At their scheduled time, participants watched their video and answered questions. To assess consumption utility, participants rated how much they enjoyed watching the video (1 = “not at all,” and 7 = “extremely”). I measured work construal next by having participants rate the extent to which watching the video felt like work/fun (1 = “felt like work,” and 7 = “felt like fun”). I also collected several control variables, including gender (male, female, other), employment status (unemployed, part-time, full-time, prefer not to answer), how many MTurk HITs they do per week, whether they regularly keep a calendar, and how long they watched their chosen video. I reasoned that controlling for these variables was crucial in this setting to understand the role of scheduling. It is important to control for the variable of keeping a regular calendar because the manipulation required the use of one. Similarly, it is important to control for employment status because the scheduled task can act as a distraction (and feel like work), and assessing participants’ frequency of completing MTurk HITs enables me to control for their viewing this HIT as a leisure task. Finally, because the main dependent variable is enjoyment, I wanted to control for participants’ actual watching behavior and used the time duration that they watched as a proxy. I used all collected covariates in all analyses for both work construal and consumption utility.

Results. Given the time delay in the scheduled condition, I anticipated attrition and thus overpopulated this condition (63 in impromptu and 97 in scheduled), and of the 160 participants recruited, 146 completed the full study. One hundred percent of the participants in the impromptu condition completed the study (as these participants immediately watched their

32
chosen video), and 83 out of the 97 (85.57%) participants assigned to the scheduled condition completed the full study.

In line with the prior studies, I find that participants who scheduled to watch the video rated it as less fun/more like work (M = 5.24) than those who watched it impromptu (M = 5.64, t(136) = 2.04, p < .05; the model includes measured controls). Those who scheduled also had lower consumption utility and enjoyed their chosen video less (M = 5.43) than those who watched it impromptu (M = 5.83, t(136) = 2.02, p < .05). Furthermore, a bootstrapped mediation with 5,000 samples indicated that work construal mediated consumption utility (95% CI = [.008, .329], see Figure 1.5 for regression results). These results are compelling because they indicate that even when participants are randomly assigned to schedule, scheduling makes a fun task feel more like work, decreasing its ultimate utility. Furthermore, this is a fairly strict test of my effect because the participants in the scheduled condition with the lowest predicted enjoyment would likely not bother to return to watch the video. One could wonder, however, whether the task assigned to participants was a pure leisure activity, as it was an HIT posted on MTurk. To address this issue, in Study 6b, I use an unambiguous leisure activity (i.e., a coffee break during finals) as the target activity. A further limitation of Study 6a was that half of the participants had to come back at a later time, whereas the other half completed the task immediately in order to make the impromptu condition truly impromptu. While several control variables potentially relevant to such selection issues were measured, in Study 6b, I keep this constant by inviting all participants to come back at a later time and manipulating whether the time is roughly scheduled (e.g., “anytime between 6:00 P.M. and 8:00 P.M.”) or specifically scheduled (e.g., 6:45 P.M.).
1.8.2 Study 6B

Method and procedure. For Study 6b, I recruited 148 undergraduate students who were studying for finals. I set up a stand on campus where I provided free coffee and cookies to students to take a break. Between 90 minutes and 30 minutes prior to setting up the stand, I recruited participants by handing out tickets for free coffee and a cookie to students studying around campus. Half of the students were asked to pick a specific time to come by and take a break (specifically scheduled condition) and their chosen time was written on their ticket. The other half were given tickets that included a two-hour redemption window (e.g., from 6:00 P.M. to 8:00 P.M. [roughly scheduled condition]) and were told that they could come by any time during this window. Thus, for both conditions, students were given a ticket in advance. Then, during their time window or at their scheduled time, participants came by the stand and traded in their ticket for a free coffee and cookie. While they were taking their study break, I handed out a
short survey assessing consumption utility by asking them how enjoyable they found the break (1 = “not at all,” and 9 = “extremely”).

**Results.** Of the 148 tickets distributed, 54 were redeemed, for an overall response rate of 36.49%. Because prior research has demonstrated that setting a specific time can increase completion rate (Milkman et al. 2012), I overpopulated the rough scheduling condition (81 in the roughly scheduled condition and 67 in the specifically scheduled condition). In line with this prior work, there was a significantly higher redemption rate in the specifically scheduled condition (33 out of 67 [49.3%]) compared with the roughly scheduled condition (21 out of 81 [25.9%]; \( \chi^2 = 8.61, p < .01 \)).

More importantly, and as expected, I found that students who specifically scheduled their break (M = 6.48) had lower consumption utility than those who roughly scheduled it (M = 7.57; \( t(52) = 2.91, p < .01 \)). Thus, in line with the results from a hypothetical scenario in Study 3, I find that specifically (vs. roughly) scheduling a leisure activity by setting a specific start time reduced the enjoyment for a leisure activity. Importantly, in both conditions, the coffee break was scheduled and considered in advance; however, specifically scheduling uniquely decreased consumption utility.

Note that this study suffers from a selection issue, as I was only able to survey those who chose to use their tickets. Although there is no reason to believe that the self-selection to utilize the ticket would differ systematically between the two conditions, it is possible for several factors (e.g., how long the students were studying before taking a break, how long after receiving a ticket was it before they took a break) to contribute to such an issue. Thus, I measured and
examined these variables. I found no significant differences. For both conditions, students had been studying for approximately five hours before taking the break (t < 1) and took their break approximately one-and-a-half hours on average after receiving their ticket (t < 1). Importantly though, taken in conjunction with Study 6a, I provide clear evidence that scheduling can lead leisure to be less enjoyable by making it feel more like work.

1.8.3 Discussion of Studies 6a and 6b

Together, Studies 6a and 6b demonstrate that the effect observed for hypothetical activities extends to the utility for experienced activities. I find that compared with being more impromptu (Study 6a) or roughly scheduling (Study 6b), participants who specifically scheduled the same leisure activity had lower consumption utility. While these studies together utilize random assignment to demonstrate that specific scheduling uniquely reduces experienced enjoyment, I further tested whether the negative effect of scheduling would present itself for those who personally chose to schedule a leisure activity. As such, 100 MTurk participants recalled the last movie they saw in theaters and indicated their enjoyment as well as whether they had specifically scheduled, roughly scheduled, or seen the movie impromptu. I find that those who specifically scheduled reported lower enjoyment (M = 7.12) compared with those who had roughly scheduled (M = 7.94; t(97) = 2.84, p < .01) or behaved impromptu (M = 8.13; t(97) = 3.20, p < .01), who did not differ (|t(97)| < 1). Of course, these results should be interpreted only in conjunction with the other empirical evidence, as they are correlational in nature and open to several alternative explanations, but they again provide more evidence consistent with my
proposed effect. Taken together, my results consistently demonstrate that when consumers schedule their leisure, they may inadvertently reduce their utility for the activity, regardless of whether this scheduling is consciously chosen or incidentally applied.

1.9 Discussion

Across 13 studies, I examine how scheduling leisure activities affects the way these events are construed and experienced. I consistently find that scheduling a leisure activity can dampen anticipation and consumption utility by making it feel more like work. Study 1 demonstrates that a leisure activity, when scheduled, takes on qualities of work. A series of six strategic replications (Supplemental Studies 1.1-1.6) further shows that the effect of scheduling leisure on work construal is robust to the busyness (vs. emptiness) of the calendar as well as whether the activity is recurring (vs. one time), occurring with (vs. without) externally imposed timetables, special (vs. mundane), initiated by a friend (vs. self), or solitary (vs. social). In Study 2, I find support for the role of temporal structure by showing that imposing structure by partitioning the activity into temporal segments behaves similarly to scheduling, making even impromptu activities feel like work.

In Study 3, I find that roughly scheduling a leisure activity (i.e., without setting specific times) does not have the dampening effect of specific scheduling. This finding supports the role of temporal structuring and establishes that my results are not driven by a boost from spontaneity. Study 4 builds on this result, showing that setting only a start time for the activity is enough structure to disrupt the perceived free-flow of the activity. Furthermore, Study 4
demonstrates that scheduling leads leisure to feel less free-flowing, which then increases work construal and decreases the utility for the activity. Study 5 shows that the negative effects of scheduling are unique to leisure activities, and do not occur for work activities.

Finally, Studies 6a and 6b demonstrate that these effects hold for experienced activities. Participants had lower consumption utility following specific scheduling, such that they enjoyed an entertaining video (6a) and a study break (6b) less than people who did not specifically schedule these activities. Taken together, the studies provide consistent evidence that scheduling, by imposing temporal structure on otherwise free-flowing leisure activities, leads such activities to feel more like work and decreases their utility. My results are noteworthy, as they are the first to show that scheduling can have negative consequences for leisure activities. In doing so, I add to an increasing body of literature that shows that planning (a related concept to scheduling) is not uniformly beneficial and can at times undermine goal commitment (Dalton and Spiller 2012) and reduce self-control (Townsend and Liu 2012). My findings extend this literature by showing that scheduling, by imposing temporal structure, can lead leisure activities to feel more like work and reduce utility.

1.9.1 Scheduling as Intertemporal Choice

Resource slack. Prior research on intertemporal preferences has shown that consumers perceive greater slack for time in the future than in the present (Zauberman and Lynch 2005). As such, consumers think that they will have time in the future and willingly commit to activities, which they later come to regret when they realize they actually do not have the time. Thus, one
might wonder whether such changes in perceived time slack also underlie my demonstration of decreased utility due to prior scheduling. However, in the resource slack paradigm, the comparison is between the evaluations of the event at two points in time—when it is scheduled and right before it is experienced—but I am interested in comparing evaluations of the activity right before it is experienced and vary whether the event was specifically scheduled or not. Furthermore, resource slack is based on the notion that people cannot predict how busy they will be in the future; however, I keep this constant by providing all participants with calendars that hold the busyness level in the relevant time frame constant. Finally, my findings are rooted in the notion that leisure activities that are scheduled are construed more like work—which is not a relevant concern for the resource slack theory. Taken together, my findings go beyond the existing theorization in this domain and shed light on unique consequences of scheduling.

Preferene uncertainty. Relatedly, one could also wonder whether my findings are driven by uncertainty about future preferences, in line with research that demonstrates that consumers may be uncertain about (Simonson 1990) or mis-predict (Loewenstein, O’Donoghue, and Rabin 2003; Loewenstein and Prelec 1992) their future consumption preferences. Thus, it is plausible that scheduling (vs. behaving impromptu), which at least implicitly involves prediction of future preferences, leaves room for such mis-prediction. I argue that the negative impact of scheduling leisure cannot be accounted for by mis-prediction alone. In particular, I find that with rough, rather than specific, scheduling, there is no detriment to consumers (Studies 3 and 6b). Both roughly and specifically scheduled plans are matched in their potential for realized preference uncertainty and/or misprediction, yet only specific scheduling (i.e., with set times) is detrimental
for leisure activities. Thus, I argue that scheduling, and not merely the inability to predict future preferences, leads to negative downstream consequences for leisure activities.

*Savoring.* Much of the prior work on anticipation utility has focused on savoring, or the positive utility experienced while waiting for an event (Loewenstein 1987; Loewenstein and Prelec 1992). In particular, Loewenstein (1987) demonstrated that consumers value delayed consumption of a desirable experience, presumably because anticipating the experience is enjoyable. I contribute to and complement this prior research by showing that the way the future is described might have important implications. In particular, prior work in this domain has described the future (planned) consumption using imprecise terminology (e.g., “in one month”), which is akin to my rough scheduling conditions. I find that while rough descriptions and impromptu activities have similarly high anticipation utility, specifically scheduling has a detrimental effect. These findings establish an important boundary condition to the savoring literature.

**1.9.2 Potential Boundary Conditions**

Although my primary interest has been to identify a generalized phenomenon regarding scheduling leisure activities, this effect is likely not universal. My studies demonstrate that this effect is robust to a variety of changes in the context and types of activities and to individual differences such as propensity to plan and trait-level reactance (reported in the Supplemental Studies). However, I caution against extrapolating my results to instances beyond the context I
studied (i.e., commonly scheduled leisure tasks that are relatively short), because other factors may be relevant that I did not directly test.

**Highly involved populations.** How involved consumers are with their activities can vary across activities and situations for a given person or across individuals for a given activity (Havitz and Mannell 2005; Richins, Bloch, and McQuarrie 1992). In the context of scheduling, it is possible that consumers who are highly involved with an activity (i.e., a very avid football fan watching the Super Bowl) might perceive this activity as free-flowing regardless of scheduling. Furthermore, it is even possible for such a fan to derive positive utility in anticipation of the activity when it is scheduled. Studying involvement in this domain might be a fruitful avenue for further research.

**Populations with low opportunity cost of time.** While not very common, certain individuals or populations (e.g., prisoners, retirees) might have very low opportunity cost of time. That is, their time might be characterized by almost no allocation to work or leisure activities. In the absence of things to do (productively or enjoyably), it is possible that a scheduled activity might be the source of savoring and not dread. Although this is a provocative prediction, such populations are rather difficult to access. As such, in this chapter, I focused on more general populations. Nonetheless, examination of this issue would be an interesting extension.

**Activities spanning multiple days.** Throughout the studies, I used tasks that spanned no more than several hours. Thus, one may wonder whether scheduling may likewise affect longer tasks that span full (or multiple) days. Central to my theory is the idea that scheduling imposes
temporal structure through partitioning time. In the case of activities that span multiple days (e.g., vacations), the temporal structure added by scheduling might not be readily salient. I therefore conjecture that activities spanning more than a day would likely not be subject to the effect of scheduling, as scheduling would not temporally structure or reduce the free-flowing nature of such extended activities. Although this is beyond the scope of the current chapter, it is a worthwhile possibility for further research.

*Activities comprising multiple components.* Throughout the studies, I predominately used activities that have a singular component (rather than multiple components, with the exception of Study 2). Thus, one may wonder whether scheduling individual components within an extended activity would show a detriment. When an activity has several components (e.g., an amusement park with multiple rides, a city with several tourist sites), scheduling may allow for better time management and may increase utility by enabling consumers to enjoy more of their desired activities (albeit perhaps with less enjoyment for each individual activity, as I propose). Thus, the net effect of scheduling may be positive because of the potential for greater efficiency or effectiveness in time use. This is an interesting extension, and further research could explore the net effect of scheduling on consumer happiness.

### 1.9.3 Potential Alternative Accounts

Across 13 studies, I provide consistent evidence that scheduling can lead leisure to feel more like work and decrease utility. In doing so, I have focused on demonstrating the robustness and boundaries to this effect. I use “work construal” as a broad construct that taps into how
effortful and chore-like an activity feels after it is scheduled. Although I am able to provide some evidence against certain alternative accounts, I acknowledge that the effect of scheduling on utility is a complex and likely multiply determined phenomenon, which poses an opportunity for future studies to identify additional or more specific cognitive mechanisms. Next, I discuss the most prominent potential alternative mechanisms.

Reactance. Although I have suggested that scheduling leads to greater work construal and lessened utility for leisure activities by reducing perceived free-flow, one might wonder whether scheduling would also lead to reactance (Brehm 1966) by restricting personal freedom. I believe that reactance cannot account for my full set of results, because my effect persists when the task is personally planned or solitary (Supplemental Study 1.5 and 1.6), and I find that roughly scheduling (which also restricts future time) does not follow the same pattern as specific scheduling (Studies 3 and 6b). Nonetheless, to test this account more directly, I ran an additional study (reported briefly in Supplemental Study 1.6 as a posttest), measuring reactance using a subset of the Hong (1992) Psychological Reactance Scale and found that this did not moderate my effect. Thus, it is unlikely that reactance can fully account for my results.

Construal. It may also be possible that scheduling increases the focus on feasibility concerns regarding the leisure activity, thus making it feel more work-like and less enjoyable. To address this possibility, I ran an additional study in which participants considered a movie with a friend that was either scheduled or impromptu and rated the activity on free-flow. I also measured concreteness of their thinking following the scheduling manipulation using the behavioral identification scale (Vallacher and Wegner 1989). I found that whereas scheduled
leisure was perceived as significantly less free-flowing (M = 4.18) than impromptu leisure (M = 4.96; p < .05), this did not affect concreteness in thinking (M_{scheduled} = 7.18, M_{impromptu} = 7.19; p > .10). As such, it is unlikely that construal would be the main driver of my results.

1.9.4 Implications

*Experiential marketing.* Because many leisure activities are experiential, my work also contributes to the growing literature on the effect of material versus experiential consumption on consumer happiness (Dunn, Gilbert, and Wilson 2011; Nicolao, Irwin, and Goodman 2009; Van Boven and Gilovich 2003). While much of this prior research has focused on the comparison between experiential and material purchases, I demonstrate a contextual factor—scheduling—that can influence the utility of experiences. My findings suggest that happiness may depend not only on whether leisure is experienced but also on how the experiences are approached in terms of scheduling. Thus, it may not be enough to consider only whether to take part in positive experiences, such as leisure activities but also how to take part in such experiences.

My results also have important implications for marketers, particularly in this domain. Experiential marketing is growing, with many firms offering full experiences (Schmitt 1999). For such efforts to foster enjoyable experiences to succeed in the long run, it is important for consumers to have favorable evaluations both in anticipation of and following consumption of the experiential product. My results indicate that strategies that encourage/discourage consumers’ scheduling behavior may affect such evaluations. That is, while programs that encourage consumer scheduling may increase short-term demand, it may be at the expense of
long-term customer satisfaction as evidenced by the decreased utility for the activity. Experiential marketers, therefore, may benefit from policies that encourage more impromptu behavior—for example, through call-ahead seating rather than advanced reservations and by partnering with smartphone applications (e.g., YPlan, Tablelist; Sovich 2016) that help accommodate last-minute consumers by connecting them with available same-day tickets and reservations.

Retailing. My results have important implications for retailers. Retailers often appeal to customers’ desire to shop by introducing deals and sales. These promotional actions are generally scheduled and constrained (e.g., happy hours, sales limited to a few hours). Although constrained language may create a sense of scarcity, it may also have detrimental consequences for how enjoyable the shopping trip feels. In particular, my findings suggest that such specifically scheduled promotions may harm the shopping and consumption experience for leisure shoppers, making it feel more chore-like and less enjoyable. When aiming to maximize more want-based (vs. need-based) shopping, retailers may therefore benefit from using more rough language (e.g., “Sale all morning”).

Consumer welfare. My results have important implications for consumer well-being, contributing to prior literature demonstrating how time consumption influences happiness (Aaker, Rudd, and Mogilner 2011; Mogilner 2010). I show that scheduling can make leisure activities feel more like work and can dampen the anticipation and consumption utility of such activities. Thus, consumers may benefit from behaving more impromptu or by only roughly scheduling (e.g., without specified start and end times) when faced with opportunities for leisure.
Managerial implications. My research has important implications for firms because it identifies an important way to increase both employee and customer satisfaction. In an attempt to promote a positive and balanced work environment, many firms organize non-work events (e.g., happy hours, retreats) for their employees, giving them an opportunity to bond in a relaxed atmosphere. These activities, however, are often scheduled (e.g., Thursday 5–8 P.M.). My work suggests that such an approach might backfire by making leisure engagements feel like work that has to be done (as opposed to something to be enjoyed). Fortunately, my research also provides a remedy: keep non-work engagements impromptu or roughly scheduled. For example, impromptu social gatherings (proverbial “water cooler discussions”) are crucial to employee satisfaction partly because they are not planned and are instead free-flowing. Increasing opportunities for employees to engage in nonscheduled leisure activities may lead to more employee engagement.

1.10 Appendices
### APPENDIX 1.1 – STUDENT CALENDAR USED IN STUDY 1

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### APPENDIX 1.2 – CALENDAR USED IN STUDY 2

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APPENDIX 1.3 – STUDENT CALENDAR USED IN STUDY 3

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APPENDIX 1.4 – INSTRUCTIONS USED IN STUDY 3

Panel A – Specific Scheduling Condition
That morning (Monday), while on your way to your first class you run into a friend you’d like to catch up with. You discuss grabbing froyo Tuesday and agree to meet up at 4:00pm.
Please add this plan to your calendar now.

Panel B – Rough Scheduling Condition
That morning (Monday), while on your way to your first class you run into a friend you’d like to catch up with. You discuss grabbing froyo sometime Tuesday before your meeting.
Please add this rough plan to your calendar now.
APPENDIX 1.5 – STUDENT CALENDAR USED IN STUDY 4

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APPENDIX 1.6 – INSTRUCTIONS USED IN STUDY 4

Panel A – Start & End Scheduling Condition
That morning (Monday), you see an email thread from a couple days ago. A few of your friends are going to get together to play frisbee on Mudd Field Wednesday from 4:30-6:30pm. You’re free at that time and decide to join.

Please add this plan to your calendar now.

Panel B – Start Time Only Scheduling Condition
That morning (Monday), you see an email thread from a couple days ago. A few of your friends are going to get together to play frisbee on Mudd Field Wednesday from 4:30pm onward. You’re free at that time and decide to join.

Please add this plan to your calendar now.
1.11 Supplemental Studies

This appendix includes full descriptions of additional analyses and studies. Supplemental Studies 1.1-1.6 replicate Study 1 and provide additional evidence that scheduling leads leisure activities to take on qualities of work while conducting robustness checks. In Study 1 participants were shown a busy calendar and considered a one-time, everyday activity that their friend initiated, leaving open the possibility that the effect is limited to such circumstances. To help address this, Supplemental Studies 1.1-1.6 provide evidence that the effect of scheduling on work construal occurs when the schedule is completely free (1.1) and persists for activities that are recurring (1.2), occur on an externally imposed timetable (1.3), are special (1.4), are self-planned (1.5), and are solitary (1.6).

SUPPLEMENTAL STUDY 1.1 – FREE CALENDAR

Supplemental Study 1.1 examined whether the effect of scheduling on the work qualities of leisure activities would persist even when participants are given a completely free calendar. Importantly, it could be that perceived business drives the effect of scheduling, with schedulers perceiving greater business and time pressure than those in the impromptu condition. Furthermore, those in the scheduled condition may infer that they must be very busy indeed if even their leisure activities must be scheduled. Supplemental Study 1.1 provides evidence against this alternative by testing the robustness of the effect to alterations in the business of the calendar.
Participants and Procedure. Seventy-four MTurk participants took part in this study. All participants saw a completely free calendar. Those in the scheduled condition imagined that their friend invited them Saturday morning to an 8:00pm movie Sunday night, which they then added to their calendar. Those in the impromptu condition imagined that their friend invited them to a movie Sunday night, about half an hour prior to the 8:00pm movie. All participants then rated the work qualities of seeing the movie (obligation, commitment, \( \alpha = .83 \)) on 7-pt scales (1 = Not at all, 7 = To a great extent).

Results. Fourteen participants were removed from the analysis for completing the study more than once, leaving 60 usable responses. I found the predicted effect of scheduling where those who scheduled construed the movie more as work (M = 4.25) than those in the impromptu condition (M = 3.31, t(58) = 2.15, p < .05) despite the schedule being completely free. Thus, Study 1B demonstrates the robustness of the effect of scheduling to the business of the calendar.

SUPPLEMENTAL STUDY 1.2 – RECURRING ACTIVITY

Due to the one-time nature of the activities used in studies thus far, one may wonder whether the effect of scheduling would extend to recurring events, which may be implicitly scheduled (e.g., if they occur every week). In this study, participants were asked to consider an event that is recurring in order to test the robustness of the effect to this quality of the leisure activity considered. Furthermore, it could be that participants in the scheduled condition infer that the leisure activity is rare if it must be scheduled in order to be taken part in. Thus, this study helps to address this confound.
Participants and Procedure. One hundred and nine undergraduates took part in this study. The design followed very closely to that of Study 1 with one key change. All participants considered getting frozen yogurt with a friend, with whom they “get together over a coffee or snack every week.” Half of the participants then scheduled this outing on their calendar while the other half imagined that it occurred impromptu.

Results. I found the predicted effect such that the activity felt more like work (chore, obligation, effortful, α = .73) when scheduled compare to impromptu (\(M_{\text{Scheduled}} = 3.64, M_{\text{Impromptu}} = 3.10, t(107) = 2.16, p < .05\)), even when it was recurring. Thus, this study demonstrates that the effect of scheduling on the work construal of leisure activities extends beyond one-time events to recurring activities.

SUPPLEMENTAL STUDY 1.3 – ACTIVITY WITH EXTERNAL TIMETABLE

The purpose of this study was to test the robustness of the observed effect of scheduling to activities with externally imposed timetables. In particular, one may wonder whether the effect would manifest for activities that occur on a known schedule. To address this, in Supplemental Study 1.3, participants evaluated an intramural volleyball game that was either scheduled or impromptu.

Participants and Procedure. One hundred and thirteen undergraduate participants completed this study. Participants were shown a three-day calendar and asked to imagine that it was their actual schedule for the next few days. All participants read that they and a few friends had signed up for Intramural volleyball. Those in the scheduled condition were asked to imagine
that it was Monday morning when they saw an email from Intramural leagues reminding the team of their upcoming game Wednesday from 4:30-5:30pm and they decide to join in and add this plan to their calendar. Those in the impromptu condition imagined that it was 4:00pm Wednesday afternoon when they saw the email from a few days ago reminding them of their upcoming volleyball game, and they decide to quickly get ready and head to the game. All participants rated the work qualities (effortful, chore, work, $\alpha = .88$) of playing volleyball as they were heading to the game.

**Results.** I found the predicted effect such that scheduling led to greater work construal even with an activity that occurred on an externally imposed timetable ($M_{\text{Scheduled}} = 4.11$, $M_{\text{Impromptu}} = 3.25$, $t(111) = 3.24$, $p < .01$). Thus, while Study 1 used a design in which participants engaged in a leisure task that was unstructured, generally lacking pre-specified times, I find in Supplemental Study 1.3 that the effect also occurs for activities that take place on a known external timetable. Despite the activity having pre-set times from an outside organization, individual scheduling led to greater work construal than engaging in this activity impromptu.

**SUPPLEMENTAL STUDY 1.4 – SPECIAL ACTIVITY**

The studies thus far have used rather mundane activities. One might wonder if I would obtain similar results if the event in question were more special. In particular, it is possible that more special events will evoke savoring (Lowenstein 1987), counteracting the effect of scheduling, especially considering that the savoring literature employed rather special and unique activities (e.g., a kiss from your favorite movie star; Loewenstien 1987; Rottenstreich and Hsee
2001). However, I argue that my effect is driven by specifically scheduling a leisure activity, regardless of its specialness. I address these issues by having participants evaluate a scheduled or impromptu special occasion.

**Participants and Procedure.** Seventy-five MTurk participants completed this study. Participants were shown a two-day calendar and asked to imagine that it was their actual schedule for the weekend. In order to test the robustness of the effect to alterations in the calendar provided, this study utilized a schedule that contained only leisure activities. Those in the scheduled condition were asked to imagine that it was Saturday morning when their friend called to invite them to see a “special movie preview where the star actor and director will do a Q&A after the movie and be available to sign autographs” Sunday night at 8:00pm. They agree and imagined adding the plan to their calendar. Those in the impromptu condition imagined that it was Sunday evening around 7:30pm when their friend called to invite them to the special movie preview that night at 8:00pm. All participants rated the work qualities (obligation, chore, commitment, α = .83) of seeing the movie, imagining that it was Sunday night right before they were leaving to meet their friend.

**Results.** I found the predicted effect such that scheduling led to greater work construal even with a special activity (M_{Scheduled} = 3.47, M_{Impromptu} = 2.53, t(73) = 2.35, p < .05). Thus, this study demonstrates the robustness of the effect to further variation in both the leisure activity as well as the calendar provided. Despite the specialness of the event and the calendar containing only leisure activities, scheduled leisure took on qualities of work.
The purpose of this study was to address activities not initiated by a friend. It is possible that accepting an offer from a friend and scheduling this activity can increase the level of commitment, which in turn can account for my results. Thus, it could be that the measure used to assess work construal is instead capturing felt commitment to others, with those who scheduled feeling greater commitment to their friend than those in the impromptu condition. Furthermore, activities planned by and performed with others can feel like an outside influence over one’s own choice and may lead consumers to feel a loss of personal control over how their time is spent. This perceived loss of personal control could then produce a reactive state (Brehm 1966; Zemack-Rugar, Fitzsimons, and Lehman 2008), accounting for my results. Thus, it is possible that loss of personal control could lead those in the scheduled condition to conceive the activity not as more work-like, but as simply more negative. Thus, it is important to establish the robustness of the effect to varying levels of social commitment and outside influence, providing evidence that work construal and not mere commitment or overall negative attributions drives the difference between scheduled and impromptu leisure.

**Participants and Procedure.** Seventy-six MTurk participants completed this study. Participants were shown a two-day calendar and asked to imagine that it was their actual schedule for the weekend. Those in the scheduled condition imagined that it was Saturday morning when they invited their friend to see a movie Sunday night at 8:00pm. Their friend agreed and the participants imagined adding the plan to their calendar. Those in the impromptu condition imagined that it was Sunday evening around 7:30pm and they invited their friend to see a movie that night at 8:00pm. All participants rated the work qualities (obligation, chore,
commitment, $\alpha = .78$) of the movie, imagining that it was Sunday night right before leaving to meet their friend.

*Results.* I found the predicted effect such that scheduling led to greater work construal even with an activity that was personally planned ($M_{\text{Scheduled}} = 4.17$, $M_{\text{Impromptu}} = 3.42$, $t(74) = 2.11$, $p < .05$). Thus, while Study 1 used a design in which participants engaged in a leisure task that was planned by a friend, the effect of scheduling replicated despite altering this social component. As such, increased commitment to another individual cannot account for the results. These results also take a step towards ruling out reactance as an alternative account. That is, personally planning should also carry a sense of greater personal control over how one’s time is used. Nonetheless, I still find the effect of scheduling on work construal. Supplemental Study 1.6 extends this argument further by demonstrating the effect with a solitary activity.

SUPPLEMENTAL STUDY 1.6 – SOLITARY ACTIVITY

*Participants and Procedure.* Seventy-nine MTurk participants took part in this study. Participants were shown a two-day calendar. Those in the scheduled condition imagined that it was Saturday morning and that they decided that it would be nice to see a movie sometime that weekend, picked a movie at 8:00pm Sunday night, and added the movie to their calendar. Those in the impromptu condition decided to go to a movie Sunday night about half an hour prior to the movie time. All participants rated work construal (obligation, chore, commitment, $\alpha = .87$), imagining that it was Sunday night right before they were leaving to go to the theater.
Results. As predicted, those who scheduled construed the solitary activity more like work (M = 3.67) than in the impromptu condition (M = 2.61, t(77) = 2.57, p < .05). Thus, the effect of scheduling is robust to the solitary (vs. social) nature of the leisure activity. Furthermore, this study provides further evidence against commitment and reactance as alternative drivers of the effect. In particular, the effect of scheduling on work construal persists for a solitary event, which lacks commitment to a friend and should carry a sense of greater personal control.

In order to provide additional evidence against reactance as an alternative explanation, a posttest was run in which a separate group of 80 MTurk participants rated the work construal of going to a movie with a friend that was either scheduled or impromptu and then completed the emotional response toward restricted choice and the resisting influence from others subsets of the Hong Psychological Reactance Scale (Hong 1992) as well as the Propensity to Plan for Time Short Run Scale (Lynch et al. 2010). In particular, it could be that only highly reactive individuals will show the effect. Alternatively, it is possible for those who do not tend to plan to be especially reactant to a restriction in perceived freedom. In three separate models, I find a significant main effect of scheduling (all ps < .05) on work construal of a hypothetical movie and no significant interaction of scheduling with the restricted choice subscale (F(3, 76) = 1.40, p > .2), the resisting influence subscale (F(3, 76) < 1), or the propensity to plan scale (F(3, 76) < 1). Thus, the effect of scheduling is not driven by level of reactance or whether participants generally plan for time.
Chapter 2
When an Hour Feels Shorter: Future Boundary Tasks Contract the Perception and Consumption of Time

2.1 Introduction

Scheduling has arisen as a widely-adopted strategy to help time-pressed consumers organize and best use their time (Bond and Feather 1988; Kaufman-Scarborough and Lindquist 2003). Consumers schedule by allocating time to specific tasks while leaving intervals of unaccounted time in between to use at their discretion (Southerton 2003). The benefits of scheduling individual tasks is well-established: scheduling helps consumers to prioritize tasks (Fernbach, Kan, and Lynch 2015), and may serve as a memory aid (Milkman et al. 2012) or commitment tool (Dai et al. 2012). However, how scheduling might influence the perception and consumption of the unaccounted time surrounding the scheduled tasks is yet to be explored. In this essay, I examine such intervals of time and propose that scheduling can reduce the perceived duration of the (unaccounted) time leading up to a scheduled task, altering the way that time is ultimately consumed.

Extending the literature on attentional narrowing effects on spatial distance perception (Cole, Riccio, & Balcetis 2014; Wu, Ooi, and He 2004), I suggest that when a scheduled task occupies the endpoint of an interval, consumers’ attention narrows towards the endpoint, making
the endpoint loom nearer in time. As such, the interval feels subjectively shorter. Importantly, I propose and find that this subjective contraction of time happens above and beyond any objective time constraints that an upcoming task might impose (e.g., getting ready). Further, once time feels shorter, consumers become less willing to spend that time, particularly on relatively extended tasks, even when these extended tasks can feasibly be accomplished and are more lucrative.

2.2 Theoretical Framework

2.2.1 Scheduling and Temporal Boundaries

At its heart, scheduling structures time. Just as significant dates divide time throughout the year into segments (Dai, Milkman, and Riis 2014; Peetz and Wilson 2013), scheduling segments the day into intervals between tasks. That is, a scheduled task divides time into two mental categories, one preceding the task and one following it. As such, in addition to its influence on individual scheduled tasks (Milkman et al. 2012; see also chapter 1), scheduling also creates temporal boundaries for the surrounding time. As outlined in Figure 2.1, a boundary can either mark the endpoint, terminating an interval of time (e.g., 10:00am-11:00am) or mark the beginning point, initiating an interval of time (e.g., 1:00pm-2:00pm). A given interval that does not border a scheduled task would be considered unbounded (e.g., 9:00am-10:00am and 2:00pm-3:00pm).
While each of these time intervals are of objectively equivalent length and all have a specified endpoint, I suggest that the endpoint of the 10:00am-11:00am interval, which is marked by a scheduled task starting at 11:00am, is more salient. Building on prior research on attentional narrowing that established the role of physical (end)points on spatial distance perception, I propose that salient temporal endpoints will systematically influence duration perception.

### 2.2.2 Attentional Narrowing and Time Perception

Prior research on attentional narrowing within cognitive psychology established that increasing the visual attention paid to an (end)point in physical space shrinks the perceived distance between the self and that endpoint (Cole, Riccio, & Balcetis 2014; Wu, Ooi, and He 2004). Put differently, focusing visually on a particular endpoint in space leads that location to feel physically closer. This prior research further shows that when consumers take a broader view by incorporating the environment around the particular point, distance perceptions
elongate. This relationship between perceived physical distance and attentional narrowing is depicted visually in Figure 2.2, Panel A. Prior work on attentional narrowing is also broadly consistent with research demonstrating that objects that are related to immediate goals, and are thus more likely to garner attention, feel physically closer in space (Balcetis and Dunning 2010).

**FIGURE 2.2 – ATTENTIONAL NARROWING AND PERCEIVED DISTANCE**

Based on the research demonstrating that spatial and temporal distance are perceived analogously (Caruso et al. 2013; Liberman & Trope 2008), I suggest that a similar process might underlie the effect of scheduling on time perception (see Figure 2 Panel B). That is, when judging the temporal distance to a particular point in time (i.e., the duration of an interval), the distance may feel shorter if the consumer focuses more narrowly on the endpoint (i.e., the scheduled task). I further posit that the presence of a boundary task might automatically draw attention to the endpoint of the interval, just as a salient, distinct object in one’s environment
draws disproportionate attention (Calvo and Nummenmaa 2008; Treisman and Gormican 1988). The “next in line” effect supports this notion by demonstrating that an upcoming task can draw a disproportionate amount of attention at the expense of the present (Brenner 1973). Putting these together, I predict that when a scheduled task marks the end of a time interval, greater attention should be drawn to the endpoint, leading the end to loom nearer in time and thus for the interval to feel shorter.

A framework based on attentional narrowing allows me to make further predictions of moderating factors. Because attentional narrowing is forward-looking and based on the salience of the endpoint, tasks that bound the beginning of a time interval should not influence the duration judgments of that interval. Consequently, in the example above in Figure 2.1, one would expect the 10:00am-11:00am interval to feel shorter than both the 1:00pm-2:00pm (bounded by an initiating task) and 2:00pm-3:00pm (unbounded) intervals.

It is important to note that my examination is focused particularly on prospective evaluations of time, or looking forward, how long the duration of an interval feels (Kim and Zauberman 2013; LeBoeuf 2006; Van Boven et al. 2010). In doing so, I refer to prospective time perception, subjective perception, and subjective duration judgments interchangeably to mean how long a prospective duration of time feels. Prior research has examined two other temporal perspectives: retrospective time, or looking back, how long the duration of an interval feels (Faro, Leclerc and, Hastie 2005; Read et al. 2005; Zauberman et al. 2010), and experienced time, or in the moment, how quickly or slowly time seems to pass (Conti 2001; Hansen and Trope 2013; Sackett et al. 2010). While much of the prior theorization on prospective time perception
has grown from literature focusing on retrospective temporal judgments (Fraisse 1984; Hornik 1984), my framework is based on attentional narrowing, a uniquely forward-looking perceptual process. Additionally, while much of the prior research on prospective duration judgments examined estimated task completion times, or how long consumers predict a particular task will take them to complete (Halkjelsvik and Jørgensen 2012; Roy, Christenfeld, and McKenzie 2005), I build a theoretical framework that allows me to study how unaccounted time intervals are perceived and thus ultimately consumed. Thus, I contribute to the time perception literature by identifying the presence and salience of boundary tasks as a unique driver of prospective time perception and consumption.

2.2.3 Time Perception and Consumption

As previously discussed, my framework allows me to examine time consumption, as well as time perception. I propose that boundary tasks will alter time consumption in two ways by 1) decreasing consumers’ overall willingness to spend their available time prior to the scheduled task and 2) altering the types of tasks that consumers choose to perform within that interval of time. In making these predictions, I draw from the literature that suggests that once time feels shorter, it also feels less sufficient (Bilgin and LeBoeuf 2010). Furthermore, once time feels scarce, consumers are less likely to spend time on a target task (DeVoe and Pfeffer 2001) and become less willing to spend time waiting (Etkin, Evangelidis, and Aaker 2015). Building on these findings, I suggest that because consumers feel like their time prior to a scheduled task is shorter, they will be overall less willing to spend this time.
In addition to overall willingness to spend time, I propose that scheduled boundary tasks will influence the types of tasks that consumers select to perform. This prediction is based on research demonstrating consumers’ desire to be able to complete the tasks that they start (Jhang and Lynch 2015; Straub and Karahanna 1998; Webster and Kruglanski 1994). That is, consumers are often driven to complete tasks once they are initiated. Therefore, consumers should be particularly reluctant to take part in tasks that they feel cannot be accomplished within the available time. Because bounded intervals feel shorter, it stands to reason that relatively extended, but objectively feasible, tasks should feel less accomplishable during such intervals. As such, I suggest that consumers will become more likely to forgo relatively extended (though feasible) tasks in favor of shorter, more easily accomplished tasks during bounded time intervals.

I report results from nine lab and field studies testing whether intervals bounded by scheduled tasks feel shorter and are thus consumed differently (see Table 2.1 for a summary of studies). I demonstrate that bounded intervals are perceived as significantly shorter than unbounded intervals (Studies 1 and 2). Further, in line with the proposed role of attentional narrowing, whereby a future scheduled task contracts time by drawing increased attention to the interval endpoint, I further find that only terminating (vs. initiating) boundary tasks lead to temporal contraction (Study 3). Finally, I demonstrate that the presence of boundary tasks alters how consumers use their available time, utilizing both real, incentive-compatible and hypothetical behavior, in both the lab and field. My findings establish that consumers are less willing to use their time (Studies 4a-4c), especially forgoing relatively productive and extended (though feasible) tasks when time is bounded, even in the face of monetary incentives (Studies
2.3 Study 1: Bounded vs. Unbounded Intervals
The purpose of Study 1 was to provide initial evidence that scheduled boundary tasks lead the preceding time to feel shorter. I predicted that participants who had a future scheduled event would perceive the same amount of time preceding the event as significantly shorter than those who did not have a scheduled future event and tested this with a correlational field study.

2.3.1 Method and Procedure

Sixty three attendees at a conference took part in this two-cell (interval: bounded vs. unbounded) correlational design. As part of the conference agenda, there was a break occurring from about 4:00pm until 4:45pm, with a presidential address taking place at 4:45pm. Participants were stopped and asked to complete a short survey. They first indicated whether they were planning to attend the presidential address at 4:45pm (yes, no, maybe). Next, participants indicated time perception (“How long do you consider the duration between now and 4:45pm?”) on a 50-point subjective scale (1 = very little time, 50 = a lot of time; see Appendix 2.1 for exact instructions). Note that prior research has used a variety of anchors and scales to elicit subjective duration estimates that have been shown to be highly correlated (Zauberman et al. 2009). I adopted this commonly used measure of subjective perception.

Finally, because participants were surveyed over a period of time, the time when the survey was taken was recorded and used as a control variable in the analysis. Note that current time was used as a statistical control only in this study as it varied between participants. In future studies, objective time is carefully controlled, eliminating the need for this statistical control variable.
2.3.2 Results and Discussion

Of the 63 participants, 39 (61.9%) indicated that they planned to attend the presidential address and were thus classified as having a bounded interval. The remaining participants who indicated that they definitely were not (8, 12.7%) or were maybe planning to attend (16, 25.4%) and who had thus not specifically scheduled the event were combined and were classified as not having a bounded interval. As predicted, those who considered this interval to be bounded rated it as significantly shorter (M = 13.76) than those who considered it to be unbounded (M = 18.27, t(62) = 2.04, p < .05). My statistical control of current time showed the expected effect whereby those who were surveyed further from the scheduled task indeed perceived that they had more time than those who were surveyed closer to the scheduled task (t(62) = 2.69, p < .01). This study provides initial evidence in the field that bounded intervals feel subjectively contracted. However, due to the correlational nature of the design, it could be that those who planned to attend the upcoming event actually had objectively less time. I address this issue next by manipulating, rather than measuring, boundary tasks, and by examining both subjective and objective duration estimates.

2.4 Study 2: Subjective vs. Objective Time Estimation

In Study 2, I sought to demonstrate that the effect of boundary tasks is driven by subjective rather than objective differences between bounded and unbounded intervals. As such, I directly measure both objective and subjective time estimates in order to demonstrate that boundary tasks lead time to feel subjectively contracted but do not influence judgments of
objective time.

2.4.1 Method and Procedure

One hundred ninety-eight MTurk participants took part in this 2 (Interval: bounded vs. unbounded; between subjects) x 2 (Estimate: objective vs. subjective; within subjects) mixed design. In the bounded condition, participants imagined that it was 7:00pm on a weeknight and their friend was coming over at 8:00pm. In order to emphasize that this hour was truly and objectively available to them, they also read that “you are all ready for your friend to come by.” Participants in the unbounded condition instead imagined that it was 7:00pm on a weeknight but that they did not have any plans for the evening and thus lacked any future boundary task. To provide a strict, direct test that the effect of boundary tasks reflects subjective rather than objective differences in available time, participants in this study were asked to estimate the number of available minutes, rather than the duration, of the interval. If consumers indeed perceive objective differences (real or inferred) between bounded and unbounded time, perhaps because bounded intervals prompt a need to get ready for the upcoming scheduled task, then participants should estimate that there are objectively fewer available minutes for actual use in bounded intervals. If instead the effect is driven by subjective perception, then such an objective measure should not differ between bounded and unbounded intervals. To that end, following the boundary manipulation, all participants imagined that they decided to read a book during the next hour and indicated both the objective number of minutes they could spend reading (“Objectively, how many minutes could you spend reading your book during the next hour?”) as
well as the subjective number of minutes they felt like they could spend reading (“Subjectively, how many minutes do you feel like you can spend reading your book during the next hour?”; adapted from Cheng and Cryder 2016). The order of the objective and subjective measures was counterbalanced. I expected to observe a difference in the subjective, but not in the objective time measure.

2.4.2 Results

A mixed ANOVA revealed a significant main effect of boundary \( (F(1, 196) = 10.77, p < .01) \) such that overall, participants estimated fewer available minutes to read during the bounded interval \( (M = 44.20) \) than during the unbounded interval \( (M = 49.84) \). The main effect of measure type was also significant \( (F(1, 196) = 24.81, p < .01) \), such that overall, subjective estimates \( (M = 44.43) \) were lower than objective estimates \( (M = 49.61) \). Importantly, these main effects were qualified by the predicted interaction \( (F(1, 196) = 15.85, p < .01; \) see Figure 2.3). Replicating the results of Study 1, I find that participants in the bounded condition subjectively felt that they could spend significantly fewer minutes reading \( (M = 39.54) \) than those in the unbounded condition \( (M = 48.86, t(196) = 5.23, p < .01) \). Importantly, when providing an objective estimate, participants in both the bounded \( (M = 49.32) \) and unbounded conditions \( (M = 50.36, |t(196)| < 1) \) indicated that they had a statistically equivalent number of minutes available to read their book during the next hour. Put differently, while participants in both the bounded and unbounded conditions estimated that they had objectively the same amount of time, those in the bounded condition subjectively felt they had less time to read their book. Importantly, in the
bounded condition, subjective estimates of time were significantly lower than the objective estimates ($t(196) = 6.34, p < .01$). However, this was not the case in the unbounded condition ($|t(196)| < 1$), indicating that participants in the bounded condition recognized that they had objectively more time than they subjectively felt. It is important to note that in both conditions, participants estimated that they had objectively less than 60 minutes. That is, it appears that in both the bounded and unbounded intervals, participants leave a window of time, perhaps to use if needed to transition into the next interval. However, subjective time perception for the bounded interval was shorter above and beyond objective estimates of time. The results provide direct evidence that bounded intervals are subjectively rather than objectively contracted.

**FIGURE 2.3—STUDY 2 RESULTS**

![Graph showing objective and subjective time estimates for bounded and unbounded conditions.]

### 2.4.3 Discussion

Study 2 demonstrates that the effect of boundaries is driven by subjective rather than objective differences in perceived time, providing direct evidence against the alternative account that objective differences, whether real or inferred, between bounded and unbounded intervals drive the observed effect of time perception. While participants recognize that they have...
objectively equivalent time during bounded and unbounded intervals, bounded intervals feel subjectively contracted.

This study also provides evidence for the direction of the effect, establishing that bounded intervals feel contracted rather than unbounded intervals feeling expanded. In particular, if unbounded intervals felt expanded, then one would expect subjective estimates of available time to exceed objective estimates. However, I find no differences between objective and subjective time estimates for the unbounded interval. Providing further evidence that the observed effect is driven by temporal contraction, I find in an additional study (Supplemental Study 2.1) that a bounded hour feels significantly shorter than both an unbounded and an average baseline hour, where the latter two did not differ. Taken together, the results thus far provide consistent evidence that bounded intervals are subjectively contracted.

I propose that this temporal contraction is driven by attentional narrowing, whereby the greater attention focused on the endpoint of the interval leads bounded intervals to feel perceptually contracted. I next turn to testing the role of attentional narrowing, whereby time should feel shorter when the end (vs. starting) point is more salient.

2.5 Study 3: Terminating vs. Initiating Boundaries

In Study 3, I sought to compare the effects of two types of boundaries on time perception: those that initiate and those that terminate an interval. As outlined previously, boundaries can either initiate (i.e., mark the beginning) or terminate (i.e., mark the end) an interval of time. I
predict that only boundary tasks that terminate an interval of time, and thus create a salient endpoint, would contract time. To test this, I manipulated the presence of a boundary task and whether that boundary task terminated or initiated the interval. In this study, I also sought to provide further evidence against the alternative explanation based on the objective time required to transition to future scheduled tasks. To that end, I explicitly instructed participants to consider transition time separately. I reasoned that once they had already accounted for time to transition into the next task, such considerations should no longer influence their subjective time perception.

2.5.1 Method and Procedure

Three hundred and one MTurk participants took part in this study that followed a 2 (Interval: bounded vs. unbounded) x 2 (Scheduled task: terminating vs. initiating) fully within subjects design. Participants were provided with a hypothetical calendar (Appendix 2.2) and estimated the perceived duration of four one-hour long intervals in a random order. Scheduled on their calendar was a picnic along with an hour blocked off for transition and travel to and from the picnic in order to explicitly indicate to participants that they did not need to take into account transition time or preparation activities when providing their subjective time perception as this time had already been taken into account in their scheduling. Participants then indicated the perceived duration for two intervals (10:00am-11:00am and 11:00am-12:00pm) that preceded the scheduled task, where one of the intervals (11:00am-12:00pm) ended when the task began (terminating boundary; see Appendix 2.2). Participants also evaluated two other intervals
(5:00pm-6:00pm and 6:00pm-7:00pm) that followed from the scheduled task, where one of the intervals (5:00pm-6:00pm) began when the scheduled task ended (initiating boundary).

Consequently, two of the intervals (10:00am-11:00am and 6:00pm-7:00pm) were unbounded and two (11:00am-12:00pm and 5:00pm-6:00pm) were bounded, where one preceded and the other followed the scheduled task. Participants indicated how long they considered the duration of each of these four intervals on a 100 point subjective sliding scale (1 = Very little time, 100 = A lot of time).

2.5.2 Results

A fully within-subjects analysis revealed a significant main effect of boundary task (F(1, 300) = 20.42, p < .01) such that overall, the intervals preceding a terminating boundary (M = 33.66) were perceived as significantly shorter than the intervals following from an initiating boundary (M = 38.76). There was also a marginal main effect of time interval (F(1, 300) = 3.24, p = .07) such that the bounded intervals (M = 35.57) were perceived as shorter than the unbounded intervals (M = 36.85). These main effects were qualified by the predicted (marginal) interaction (F(1, 300) = 3.50, p = .06; see Figure 2.4). In particular, replicating the results of previous studies, prior to a terminating boundary, the bounded interval felt significantly shorter (M = 32.46) than the unbounded interval (M = 34.87, t(300) = 2.26, p < .05). However, following from an initiating boundary, I no longer find a difference between the bounded (M = 38.68) and unbounded (38.84, |t(300)| < 1) intervals. Thus, I find that bounded intervals only feel subjectively contracted when the boundary task terminates, or marks the end, rather than
initiates, or marks the beginning of, the interval.

Note that I find a strong main effect of boundary task, where the interval that immediately preceded it (i.e., bounded; 11:00am-12:00pm; \( t(300) = 4.24, p < .001 \)) and the interval before that (i.e., unbounded; 10:00am-11:00am; \( t(300) = 3.76, p < .001 \)) were both perceived as significantly shorter than their counterparts that followed from the scheduled task. That is, I find that the effect of a boundary task extends beyond the interval it directly bounds to the preceding unbounded interval. This type of gradient, whereby intervals of time become increasingly contracted as they near the scheduled task is in line with my proposed framework. In particular, the visual funnel analogy that represents attentional narrowing implies that even if the task does not mark the exact endpoint but still looms in the future, it would draw attention, albeit to a lesser extent. Therefore, such a task should still exert influence over duration perception. As such, the finding that intervals of time feel increasingly contracted as they approach a boundary task provides further evidence in support of the role of attentional narrowing.

FIGURE 2.4—STUDY 3 RESULTS
2.5.3 Discussion

Consistent with my conceptual framework, I find in Study 3 that only boundary tasks that mark a salient endpoint (vs. beginning) to an interval, and thus draw attentional focus to the interval endpoint, contract time. Further, in this study I find temporal contraction leading up to a boundary task even when transition time is explicitly taken into account, providing additional evidence that the possibility that boundary tasks require objectively more time cannot account for my findings.

Another implication of this framework is that the type of task that marks the end of an interval should not matter. Instead, any future boundary task should induce attentional narrowing on the endpoint, whether consumers are potentially savoring an upcoming desirable task or dreading an upcoming undesirable task. I tested this proposition in an additional study (Supplemental Study 2.2), in which I compared desirable and undesirable scheduled boundary tasks. As expected, I find that time subjectively contracts prior to both a desirable task (i.e., fun dinner with friends) and an undesirable task (i.e., dentist appointment), demonstrating that the mere presence and not the valence of the boundary task drives the effect.

Taken together, the studies thus far provide consistent evidence that boundary tasks that mark the endpoint of an interval induce attentional narrowing and contract the perception of time. In the remaining studies, I test the influence of boundary tasks on how available time is consumed. I conceptualize time consumption in two ways. First, I examine consumers’ overall willingness to spend their time (4a-4c), and then I examine consumers’ specific task choices within bounded time (5a-5c).
2.6 Studies 4a-4c: Willingness to Spend Bounded Time

The purpose of Studies 4a-4c was to examine consumers’ overall willingness to spend their time as a function of boundary tasks. In particular, I predict that consumers will engage in fewer tasks (4a), be less willing to volunteer for a task (4b), and be less likely to take part in a target activity (4c) during bounded time. I examined these predictions using both real (4a and 4B) and hypothetical (4c) outcomes, both in the lab (4a and 4c) and in the field (4b).

2.6.1 Study 4a

In Study 4a, I sought to demonstrate that consumers perform fewer tasks during bounded intervals of time, and did so by examining real behavior. Participants in this study were given an interval of free time to use as they wanted. Further testing the role of the salient endpoint as the driver of the effect, in this study I kept the presence of a boundary task constant, but manipulated the salience of the task. I predicted that participants would perform fewer tasks during their available time when it was saliently bounded.

Method and procedure. One hundred fifty eight undergraduates took part in this two-cell (boundary task: salient vs. not salient) between-subjects study as part of a larger session. In particular, participants were brought into the lab to complete several unrelated studies in a half hour session. At the start of the session, the experimenter (who was blind to hypotheses) told participants that the study sessions had been running faster than expected, so she would wait a
few minutes to see if more participants arrived. In the boundary-not-salient condition, participants were told that they had “about 5 minutes to do whatever you want.” Participants in the salient-boundary condition were instead told that they had “about 5 minutes before we will get started. You can do whatever you want up until I tell you it is time to start.” Thus, in both conditions, participants had an upcoming task (i.e., starting the session), but this boundary task was made more or less salient to them. After the allotted time had passed, participants were asked to write down all of the things that they had done during the five minute interval. Qualitatively examining the responses, I found that participants performed various short activities within the time, such as checking their email, sending a text message, and visiting social media sites. Because there are only a limited number of tasks that can be performed in this short (5 minute) time interval, I focused on the number of tasks (rather than the types of tasks, which I examine in Studies 5a-5c) as the primary measure of time consumption. As such, the number of tasks participants performed were counted and served as the dependent measure. I predicted that participants in the salient-boundary condition would do fewer tasks during the available time than participants in the not-salient condition.

Results and discussion. I found that participants in the salient-boundary condition did fewer activities during the available time (M = 1.86) than those in the not-salient condition (M = 2.38, t(116) = 2.62, p = .01). Thus, examining actual behavior, where all participants had an upcoming boundary task (i.e., starting the session), I find that making that boundary task more salient led participants to perform fewer tasks within their available time. This study provides initial evidence that salient boundary tasks lead consumers to use less of their available time.
while examining real behavior. While compelling, I sought to build on this evidence in Studies 4b and 4c by utilizing a different operationalization of willingness to spend time. As such, I next examine consumers’ willingness to actually perform a particular task in a field study (4b) and likelihood to perform a target task in a controlled lab design (4c).

2.6.2 Study 4b

*Method and procedure.* One hundred and two participants were recruited at an airport to volunteer to help a graduate student. Participants were approached while sitting at their gate for this 2-cell (bounded vs. unbounded) measured design. Participants were asked whether they would be willing to help a doctoral student by participating in a 15-minute study for her dissertation during the next half hour. All participants were informed that if they agreed, the survey must be completed within the next half hour. Passengers located at their boarding gate (thus not needing additional time to get to their gate) were either approached half an hour prior to their boarding time (bounded) or one hour prior to their boarding time (unbounded) and were asked whether they would volunteer to help a doctoral student during the next half hour. Thus, their boarding time served as the boundary task. To confirm that participants were appropriately classified as bounded or unbounded, they all indicated their flight boarding time, independent of their agreement to participate in the 15-minute study. Those who agreed to volunteer were then given and completed the 15-minute paper-and-pen study. Thus, the decision was incentive-compatible and required an actual commitment of time. I predicted that bounded participants would be significantly less likely than unbounded participants to volunteer 15 minutes of their
Results and discussion. Of the 102 participants recruited, 51 participants were bounded and 51 were unbounded. As predicted, those participants recruited during a bounded half hour were significantly less likely to volunteer to help a doctoral student (56.86%, 29/51) than participants recruited during an unbounded half hour (82.35%, 42/51, $\chi^2 = 7.83, p < .01$). In sum, utilizing a correlational field design with real behavior, I find further evidence that consumers are less willing to spend their available time once it is bounded.

Utilizing actual behavior, Studies 4a and 4b used very different types and lengths of tasks, but produced consistent results. In particular, while Study 4a examined the number of short and easy-to-accomplish tasks that participants engaged in, Study 4b used a target task that was relatively long, requiring participants to commit half of their available time (i.e., 15 minutes) to a single task. While I predicted and found that consumers are overall less willing to spend their time once it is bounded, I further predict that such an effect should be particularly pronounced for tasks that feel relatively infeasible to accomplish. That is, consumers’ reluctance to start a task that they may not be able to complete (Jhang and Lynch 2015; Straub and Karahanna 1998; Webster and Kruglanski 1994) should also play into their willingness to spend their time. Thus, in Study 4c I explicitly compare a task that is relatively indivisible (i.e., generally completed within one sitting) with one that is relatively divisible (i.e., commonly completed in multiple sittings). Based on research showing that time scarcity leads to an overall unwillingness to spend time (DeVoe and Pfeffer 2001, Etkin, Evangelidis, and Aaker 2015), I predicted that consumers would be overall less willing to engage in both types of tasks during
bounded time, but that this difference would be even greater for the relatively indivisible task, because consumers should feel particularly compelled to complete this task once they initiate it.

2.6.3 Study 4c

Method and procedure. Six hundred Mturk participants took part in this 2 (Interval: bounded vs. unbounded) x 2 (Task: divisible vs. indivisible) between-subjects design. Participants in the bounded condition imagined that it was 6:00pm on a weeknight, and that their friend was coming over at 9:00pm. Similarly to Study 2, they were also told that they were all ready for their friend to come by. Those in the unbounded condition instead imagined that it was 6:00pm on a weeknight but that they did not have any plans for the evening. I next manipulated divisibility of the target task by telling half the participants (divisible condition) that they “have three episodes left of a TV show that you have been binge watching. Each episode is 55 minutes long (total of 2 hours and 45 minutes).” Participants in this condition then indicated how likely they would be to watch this TV show during the time from 6:00pm to 9:00pm (1 = Very Unlikely, 7 = Very Likely). The number of episodes was not specified. Instead, they were simply asked how likely they would be to watch the show, and following this question, participants indicated the number of episodes (out of three) that they would watch if they were to watch the TV show during that time. Thus, for the TV show, I have two measures of consumption: 1) likelihood to watch and 2) amount of the show they would watch. Participants in the indivisible task condition instead read that “there is a movie that you have been meaning to watch that is 2 hours and 45 minutes long,” and indicated how likely they would be to watch this movie during
the time from 6:00pm to 9:00pm on the same seven-point scale. Thus, the total time required to watch all three episodes of the TV show was equivalent to watching the full movie. However, while the TV show is easily divided into three parts, making it easy to view in multiple sittings, the movie is harder to divide and would generally be viewed all at once. I predicted that participants would be overall less willing to spend their time on both tasks once time was bounded, but that this effect would be particularly strong for the indivisible task. Further, while consumers may be more willing to take part in a divisible task, I predicted that bounded individuals would watch fewer episodes, because time feels shorter.

**Results and discussion.** I found a significant main effect of boundaries ($F(1, 596) = 24.88, p < .001$) such that overall, participants were less likely to perform either task when time was bounded ($M = 4.82$) compared to when it was unbounded ($M = 5.45$). I further found a significant main effect of task type ($F(1, 596) = 45.52, p < .001$) such that participants were overall more likely to take part in the divisible task ($M = 5.56$) than the indivisible task ($M = 4.71$). These main effects were qualified by a marginally significant interaction ($F(1, 596) = 2.73, p = .099$; see Figure 2.5) indicating that the size of the difference between the bounded and unbounded conditions varied somewhat based on the type of target task. In particular, I find that while participants in both the divisible and indivisible conditions were less likely to engage in the target task during bounded than unbounded time, the effect was larger for the indivisible task ($M_{\text{Bounded}} = 4.29$, $M_{\text{Unbounded}} = 5.13$, $t(596) = 4.69, p < .001$) than for the divisible task ($M_{\text{Bounded}} = 5.35$, $M_{\text{Unbounded}} = 5.77$, $t(596) = 2.36, p = .02$).

Finally, those participants in the divisible task conditions also indicated the number of
TV episodes (out of three) that they would watch during that time. Looking at this measure, I found that those in the bounded condition would watch fewer episodes (M = 2.04) than those in the unbounded condition (M = 2.24, t(297) = 2.18, p = .03). Examining this measure further, I found that participants in both conditions were similarly likely to choose to watch one episode (Bounded = 28.87%, Unbounded = 26.75%, $\chi^2 < 1$), but that participants in the bounded condition were significantly more likely to watch two episodes (Bounded = 38.73%, Unbounded = 22.29%, $\chi^2 = 9.58$, $p < .01$) and significantly less likely to watch all three episodes (Bounded = 32.39%, Unbounded = 50.96%, $\chi^2 = 10.54$, $p < .01$). Thus, although there was adequate time to watch all three episodes in both conditions, participants in the bounded condition chose to watch fewer episodes. In sum, I find an overall reduced willingness to spend time during bounded intervals, even on tasks that are easily divided and for which consumers would feel less compelled to fully complete once they had been initiated.

**FIGURE 2.5—STUDY 4C RESULTS**

Study 4c provides evidence that the desire to complete a task once initiated indeed plays a role in the consumption of bounded time, though such a concern to complete tasks cannot account for the full effect. It is important to note that this study utilized fun, enjoyable tasks for
which consumers may be particularly motivated to complete once initiated due to an aversion to being interrupted during such tasks (Nelson and Meyvis 2008). As such, one may wonder whether similar effects would be found for less desirable tasks. To test this, in an additional study (Supplemental Study 2.3), I explicitly compared desirable and undesirable target tasks, finding that participants are less likely to engage in both desirable leisure (i.e., TV episode) and undesirable work tasks (i.e., online training) that are relatively long but feasible to accomplish within an amount of bounded time. Taken together, my results support the notion that overall, consumers are less willing to spend their available time on desirable or undesirable target tasks as both tasks would feel more difficult to complete within bounded time.

2.6.4 Discussion of Studies 4a-4c

Taken together, Studies 4a-4c demonstrate that consumers become less willing to consume their available time once it is bounded by a scheduled task. Examining both real and hypothetical outcomes in both the lab (4a and 4c) and field (4b), I find that participants perform fewer tasks (4a) and are less willing to perform a target task (4b and 4c) during bounded compared to unbounded time. It is important to note that the effect of boundedness is found to be exaggerated for tasks that are less divisible, relatively extended, and for which consumers would be likely to want to complete once initiated. In Studies 5a-5c I build on these findings and systematically examine consumers’ choice of tasks to perform during bounded time.
2.7 Studies 5a-5c: Task Choices within Bounded Time

Having examined consumers’ willingness to spend their available time, I next turn to examining the types of tasks that they choose to engage in once time is bounded. I predicted that upcoming scheduled tasks would not only reduce consumers’ overall willingness to spend their time, but would also alter the tasks they choose to consume within that time. That is, participants will forgo relatively productive and extended tasks during bounded time because time may feel insufficient for accomplishing such tasks. To that end, I examine the choice of tasks based on their productivity (5a) and length (5a-5c), demonstrating that consumers choose to forgo relatively productive and extended (though feasible) tasks during bounded time even in the face of actual financial incentives (5c). In doing so, I examine both hypothetical (5a and 5b) and real, incentive-compatible choices (5c).

2.7.1 Study 5a

Method and procedure. One hundred seventy four MTurk participants took part in this 2-cell (bounded vs. unbounded) study. Participants in the bounded condition read that it was 7:00pm on a Wednesday and that they were leaving to meet a friend at 8:00pm. I included the statement, “you are dressed and ready, and have an hour before you will leave to meet your friend” in order to emphasize that this time was truly available to them. Participants in the unbounded condition instead read that it was 7:00pm on a Wednesday but that they did not have any plans for the evening. All participants were then given a list of 14 items (e.g., read a book, do work, surf the internet), as well as a fifteenth “other” option and were asked to check all the
activities that they would be likely to actually do during the next hour (from 7:00pm-8:00pm). In order to examine the types of tasks participants would choose to do, participants rated all of the tasks in terms of productivity (1 = more time-wasting, 7 = more productive) and relative length (1 = relatively short, 7 = relatively long). I intended to use these two scales as a means of classifying tasks as relatively productive versus relatively time-wasting and as relatively long versus relatively short. I accomplished this by classifying the tasks with mean productivity ratings above the scale midpoint as relatively productive and those with means below the midpoint as relatively time-wasting. Similarly, those tasks with a mean length above the scale midpoint were classified as relatively long, while those with means below the midpoint were classified as relatively short. Examining the two boundary conditions separately led to the same classification assignments for all tasks. That is, participants across conditions agreed on which tasks were relatively productive/time-wasting and which tasks were relatively long/short.

Results and discussion. Looking first at the total number of selected tasks, I replicate the results of Study 4A, finding that overall, participants in the bounded condition would do significantly fewer activities (M = 3.34) than those in the unbounded condition (M = 4.36, t(172) = 2.92, p < .01). Next, I examined the types of tasks that participants selected. I found that those in the bounded condition selected significantly fewer of the productive tasks (MBounded = 1.54, MUnbounded = 2.34, t(172) = 2.87, p < .01), but just as many of the relatively time-wasting activities (MBounded = 1.80, MUnbounded = 2.02, t(172) = 1.50, p > .10). Further, those in the bounded condition selected significantly fewer of the relatively long tasks (MBounded = 0.99, MUnbounded = 1.84, t(172) = 4.25, p < .01), but just as many of the relatively short tasks (MBounded
= 2.35, M_{Unbounded} = 2.52, |t(172)| < 1). Thus, during bounded time, participants felt that they could do less with their available time, reducing the selection of relatively productive and extended tasks.

These results imply that consumers should be less likely to engage in lengthier, but not shorter, tasks when their time is bounded. I tested this notion in an additional study where I manipulated task length directly (Supplemental Study 2.4). As expected, I find that consumers are indeed less likely to engage in a relatively extended task (i.e., read a few chapters of a book), but just as likely to engage in a relatively short task (i.e., read a few pages) during bounded time.

Thus far, I have found that consumers overall do less and become less likely to engage in relatively extended and productive tasks during intervals of bounded time. I next sought to test whether this aversion to performing relatively extended (though feasible) tasks during bounded time might occur even in the face of incentives to take on a longer task. To that end, I presented participants with the choice of an extended task with a higher average rate of pay, or a shorter task with a lower rate of pay, using both hypothetical (5b) and real outcomes (5c). I predicted that participants in the bounded condition would be less likely to select the higher pay task despite having objectively enough time to complete this option.

2.7.2 Study 5b

The purpose of Study 5b was to examine whether consumers would be less likely to choose a longer (though feasible) task within bounded time, even in the face of financial incentives. I further sought to test the mediating role of time perception, whereby the perception
that bounded time is shorter drives the reduced choice of relatively long tasks.

Method and procedure. Two hundred MTurk participants took part in this 2-cell (bounded vs. unbounded) study. Participants imagined that it was 7:00pm on a weeknight and their friend was coming over at 8:00pm (bounded) or that they did not have any plans for the evening (unbounded). Participants in the bounded condition also read that “you are all ready for your friend to come by” to emphasize that the time was truly available. MTurkers imagined that during the next hour, they decided to do a survey on MTurk and chose between a 30 minute task that pays $2.50 (i.e., $5.00/hour) and a 45 minute task that pays $5.00 (i.e., $6.67/hour). Following this choice, participants were asked to indicate the perceived duration of the next hour on a 100 point sliding scale (1 = very short, 100 = very long).

Results and discussion. Looking first at task choice, I find the predicted effect of boundaries, whereby significantly fewer participants in the bounded condition (78/100) selected the 45 minute task with a higher average rate of pay compared to the unbounded condition (91/100, \( \chi^2 = 6.45, p = .01 \)). Thus, participants in the bounded condition became less likely to choose the longer, financially superior option, despite having objectively sufficient time to complete this task. Note that in Study 2, using the exact same manipulation of boundedness, participants indicated that during both a bounded and an unbounded hour they could objectively perform a task for about 50 minutes. Even considering 50 minutes (rather than the full one hour) as the benchmark, participants in the bounded condition became less likely to perform a lucrative 45 minute task for which they had objectively sufficient time.

I next examined subjective time perception. Replicating my previous results, I found that
the bounded hour (M = 47.56) felt significantly shorter than the unbounded hour (M = 55.38, t(198) = 2.16, p < .05). Furthermore, I tested whether changes in survey choice operated through subjective time perception using a bootstrapped mediation with 5000 samples (see Figure 2.6 for full regression results). Condition was dummy coded such that unbounded = 0 and bounded = 1. I found a significant indirect effect of boundedness on task choice, operating through time perception (95% [CI] = -.454, -.019). Thus, bounded time felt subjectively contracted, reducing the likelihood of engaging in the relatively long, but objectively feasible, more lucrative task option. Next, in Study 5c, I sought to replicate this effect on task choice while examining real behavior in an incentive-compatible design.

FIGURE 2.6—STUDY 5B MEDIATION RESULTS

2.7.3 Study 5c

The purpose of this study was to provide a conceptual replication of Study 5b using incentive-compatible behavior. Participants in this study provided their actual schedules for the next day and chose between the more lucrative, longer survey and the less lucrative, shorter
survey to actually complete during either a bounded or unbounded hour during their day. Participants in this study were also provided with the option to not perform either survey. I predicted that bounded participants would be less likely to choose the 45 minute survey even in the face of financial incentives.

Method and procedure. Three hundred fifty two MTurkers participated in this 2 (bounded vs. unbounded) between subjects design. Participants were recruited for an “academic study about scheduling behavior” that was described as targeting “workers who regularly schedule and use an electronic calendar.” I recruited participants on this basis because all participants were asked to provide their schedule for the following day, and I wanted to ensure that they would be more likely to have 1) at least one scheduled task and 2) their calendars on hand to be able to accurately provide their schedules for the following day. All participants were first presented with a calendar for the day divided into half hour time slots starting from 8:00am and extending to 10:00pm and were asked to fill in the time slots with all of their scheduled tasks for the following day (see Appendix 2.3 Panel A for exact instructions). Next, in order to be able to control for transition time for those participants assigned to the bounded condition, for each scheduled activity, participants were asked to indicate 1) the exact start time for each of their scheduled tasks and 2) the time that they would start any preparations or transition for their scheduled tasks (see Appendix 2.3 Panel B for exact instructions). Transition time was calculated by subtracting the time they would start preparing for the task from the task’s start time. I collected this measure in order to eliminate any participants assigned to the bounded condition who needed too much transition time in order to objectively be able to complete the longer task.
That is, I intended to only include those participants who had objectively sufficient time to participate in either task (described in detail below). Participants then answered a series of filler demographic questions (time zone, state of residence, age, gender, etc.) in order to create a short distraction task between filling out their calendar and the dependent measure (choice of a task to perform at a certain point in time) in order to reduce possible demand effects.

After these demographic questions, participants were thanked for their participation and presented with the choice to perform an additional MTurk survey the following day if they qualified. In particular, participants were told that I was recruiting participants for two additional academic studies: 1) a 30 minute brief version of the study for $2.50 and 2) the 45 minute full study for $5.00. They were also presented with a third option to not sign up for either study. They further read that the studies would only run for a limited time and were presented with a specific hour (e.g., 9:30am-10:30am) during which the study would need to be completed (see Appendix 2.4 for exact instructions). Participants were randomly assigned to conditions where those in the bounded condition were shown a target hour that ended in a scheduled task from their own calendar (e.g., they would be assigned 9:30am-10:30am if they had a scheduled task starting at 10:30am, but had 9:30am-10:00am and 10:00am-10:30am free). Those in the unbounded condition were instead shown a target hour to complete the additional study that was separate from any of their scheduled tasks by at least half an hour (e.g., they would be assigned 9:30am-10:30am if they had 9:30am-10:00am, 10:00am-10:30am, and 10:30am-11:00am all free). Participants then indicated which task they would like to complete during that bounded or unbounded hour if they qualified (30 minute study, 45 minute study, or neither study). Due to
budget constraints, I emailed ten percent of participants the next day with a link to the task of their choice to be completed during their target hour, and these selected participants were paid accordingly upon completion. The remainder of the participants were informed that that they did not qualify and thus their chosen study was not available to them. Thus, their choice had real outcomes. Finally, participants indicated whether they had other plans that had to be performed within the bounded or unbounded hour they were presented. I collected this measure in order to examine only those participants for whom the presented time was truly unaccounted. In addition to this item, two other control variables were collected: (1) busyness (“How busy are you on average?” 1 = not at all, 7 = extremely), in order to control for individual differences in scheduling and time consumption tendencies and (2) participants’ use of a paper or electronic calendar (paper, electronic, both, neither; coded as electronic or both = 1, paper or neither = 0), which was necessary for participants’ ability to accurately report their schedule.

Results and discussion. Of the 352 participants recruited, 211 were assigned to the bounded condition and 141 were assigned to the unbounded condition. I overpopulated the bounded condition as I expected that it would be more difficult to find an available bounded hour to present them with the dependent measure. One hundred seventy one (out of 211) bounded participants had a free bounded hour available and were thus presented with the dependent measure, while 138 (out of 141) unbounded participants had an available unbounded hour and were presented with the dependent measure. As discussed above, I only included the participants who fit the following two criteria: those participants who 1) had no other tasks to do during the target time and 2) had sufficient time to complete either task after accounting for required
transition time. Of the 117 participants in the bounded condition, 31 did not qualify for the first criterion and 54 did not satisfy the second criterion. In the unbounded condition, 26 (out of 138) participants failed to satisfy the first criterion (note that the second criterion does not apply for this condition). The final sample thus included 86 bounded and 112 unbounded participants, all of whom were available during the target hour and had objectively enough time to complete either task they might choose (i.e., 45 minutes or 30 minutes).

Building on Study 5b, I was interested in the likelihood of choosing the longer, 45 minute task with a higher average rate of pay. As such, I coded the dependent variable into a binary variable whereby longer task = 1, shorter task = 0, and neither = 0. Binary logistic regression (controlling for busyness and the use of an electronic calendar) revealed the predicted effect of boundedness ($\chi^2 = 3.78, p = .05$). Thus, replicating the hypothetical results of Study 5B, I find that those in the bounded condition (80.23%, 69/86) were less likely to select the longer, though feasible and lucrative task than those in the unbounded condition (88.39%, 99/112) using incentive-compatible outcomes.

2.7.4 Discussion of Studies 5a-5c

Taken together, Studies 5a-5c demonstrate that consumers become less likely to choose relatively productive (5a) and feasible, but relatively extended tasks (5a-5c) during bounded time, even in the face of financial incentives (5b and 5c). Employing both hypothetical (5a and 5b) and incentive-compatible choices (5c), I demonstrate that scheduled boundary tasks systematically alter the consumption of available time, leading consumers to forgo relatively
extended tasks in favor of shorter, more easily accomplished tasks.

2.8 Discussion

Across nine studies, I examine how intervals of unscheduled time are perceived and consumed as a function of boundary tasks. I consistently find that intervals bounded by scheduled tasks feel subjectively contracted, altering the way in which this time is ultimately consumed. Using a correlational field design (Study 1) and an experimental lab design (Study 2), I find that participants who had a future scheduled task perceived time to be shorter than those who did not have a scheduled task, even after accounting for differences in demands for one’s time. Combined with an appended study (Supplemental Study 2.1), Study 2 provides support for temporal contraction resulting from the presence of boundary tasks, rather than temporal expansion resulting from the absence of boundary tasks. Supporting my proposed attentional narrowing framework, I find that while both desirable and undesirable tasks show the effect (Supplemental Study 2.2), only terminating (vs. initiating) boundaries that mark the endpoint to an interval (Study 3) lead time to feel subjectively shorter.

I further find that the temporal contraction in the bounded condition influences consumers’ overall willingness to spend available time (Studies 4a-4c), as well as the types of tasks they select to perform (Studies 5a-5c). In particular, consumers take on fewer tasks (Study 4a) and are less likely to perform a target task (4b and 4c) during bounded (vs. unbounded) time. Furthermore, I find that consumers become less likely to choose relatively productive (5a) and extended, though feasible (5a-5c) tasks even when longer tasks are financially incentivized (5b-
5c). Using both hypothetical and incentive-compatible designs, results of my studies identify a unique driver of time perception and consumption, and establish that how consumers structure and organize their day has important implications for how they perceive and consume their free time.

2.8.1 Scheduling

Prior research on scheduling demonstrated several of its benefits (for an exception, see chapter 1). Scheduling is associated with lower anxiety and may help time-pressed consumers cope with busyness (Bond and Feather 1988), increases the likelihood of completing tasks (Milkman et al. 2012; Tonietto and Malkoc 2016), and promotes efficiency by helping consumers explicitly prioritize and plan steps necessary to complete tasks (Fernbach, Kan, and Lynch 2015). Prior research, however, has primarily examined the effect of scheduling on the scheduled tasks. As such, I contribute to this literature by examining how scheduling impacts the perception and ultimate consumption of available time surrounding scheduled tasks.

2.8.2 Subjective Time Perception

My work contributes to the current theorization on subjective time perception by developing a prospective theory of time. While much of the prior theorization on prospective time perception has grown from literature focusing on retrospective temporal judgments (Fraisse 1984; Hornik 1984), my framework is based on attentional narrowing, a uniquely forward-looking perceptual process. I next discuss how my work fits into and contributes to the two
primary models of subjective time perception that have been developed in the literature: attentional and memory-based models (Block and Zakay 1997).

Attentional models. At their heart, attentional models of time perception propose that the amount of attention that consumers devote to the passing of time dictates perceived duration in retrospect (Block and Zakay 1997; Sackett et al. 2010). This prior research has found, for example, that when consumers pay less attention to the passage of time because the current task they are performing is difficult (Zakay, Nitzan, and Glicksohn 1983) or enjoyable (Sackett et al. 2010), time feels as though it passed more quickly and thus the duration of the performed task is estimated as shorter. Importantly, such attentional models of time perception have focused predominately on 1) judgements of experienced time spent performing a task and 2) attention devoted to the unfolding of time. I contribute to this literature by examining prospective perception of unaccounted time and the effect of paying greater attention to the end of a unit of time, finding that when attention is narrowed on the endpoint, intervals of unaccounted time feel prospectively contracted. In doing so, I contribute to recent research showing that the type of task that marks the end of a unit of time can systematically impact experienced time (Maglio and Kwok 2016). In particular, that research found that time spent travelling toward a more ambiguous task feels retrospectively longer. Interestingly, it could be that a more ambiguous task may garner greater attention, posing an opportunity for future research to examine the potential differences (or similarities) between prospective and experienced temporal judgements as a function of attention to the interval endpoint.

Memory-based models. Memory-based models of subjective time perception propose that
perceived retrospective duration is a function of the amount of information recalled about the experience (Fraisse 1984; Zauberman, Levav, Diehl, and Bhargrave 2010). For example, when consumers recall more changes that occurred during an experience, they estimate that the experience was subjectively longer (Ahn, Liu, and Soman 2009; Fraisse 1984). Relatedly, when consumers can recall a greater number of intervening events related to a target past event, they perceive that target past event as having occurred longer ago (Zauberman et al. 2010). Thus, this research shows that enumerating recalled pieces of information tends to elongate retrospective temporal judgements. A similar process has also been found to underlie the prospective estimation of how long a task will take. In particular, enumerating the subcomponents of a multifaceted task leads consumers to estimate that the task will take longer to complete than if these subcomponents were not considered (Kruger and Evans 2004). While my research context focusing on the prospective perception of unaccounted time is outside of the scope of the current theorization of memory (or enumeration) based models of time perception, such models imply a potential boundary condition. In particular, such models imply that my observed effect of boundary tasks may not extend to intervals of accounted time, particularly if the interval is composed of multiple tasks or if the consumer considers the multiple components of the task. I discuss this potential boundary condition in greater depth in section 2.8.5.

2.8.3 Limited Future Time Perspective

Prior research within the aging and development literature examined the effect of a limited future time perspective on goals and behavior (Carstensen 1992; Lang and Carstensen
2002), demonstrating that the perception of life coming to a salient end makes people more focused on maintaining emotionally and socially meaningful relationships. I contribute to this literature by demonstrating that perceptions of limited time, even within a day, can systematically influence the way that time is ultimately consumed. Further research could examine whether boundary tasks not only alter consumption of available time, but also influence relevant goals and motivation within that time.

2.8.4 Potential Alternative Accounts

As with many temporal phenomena, the effect of scheduled boundary tasks on time perception and consumption is a complex and likely multiply determined phenomenon. While I provided evidence against some alternative accounts, there are a few others worth discussing.

Savoring and dread. One potential explanation for my observed results is that consumers are excitedly anticipating the upcoming scheduled task, which would suggest a process operating through savoring (vs. dread; Loewenstein 1987). An appended study (Supplemental Study 2.2) helps provide evidence against such an account. In particular, I find that the time prior to both a negative, dreaded task (i.e., a dentist appointment) and a positive, savored task (i.e., a fun dinner with friends) feels similarly contracted. If time felt shorter as consumers excitedly anticipated the scheduled task, then one would expect the dread associated with anticipating a negative task to show the opposite effect (or no effect). However, I find that time subjectively contracts prior to both types of tasks, providing evidence against this alternative account.

Mental readiness. Similarly, one may wonder whether a desire to be mentally ready for
the upcoming task (e.g., in order to get the most from the scheduled task) may play a role in my demonstrations. While such a concern may sometimes be relevant for consumers, this does not seem to be a necessary condition to my effect. In Studies 4a and 4b, I demonstrated the effect with relatively low involvement tasks – the beginning of an experimental session (Study 4a) and boarding time, with at least 15 minutes to spare (Study 4b). Mental preparation and readiness tend to be low in both of these situations, making it unlikely to serve as a credible alternative account.

2.8.5 Potential Boundary Conditions

*Accounted vs. unaccounted time.* I exclusively studied the contraction of intervals of unaccounted time. One might wonder, however, whether time periods that are accounted for would also show a similar contraction prior to scheduled tasks. That is, would a scheduled task also feel shorter if it ended in another, back-to-back scheduled task? I ran an additional study in order to directly test this possibility using a 2 (Interval: bounded vs. unbounded) x 2 (Time: accounted vs. unaccounted) fully within subjects design. Participants were provided with a hypothetical calendar for the day that had two meetings scheduled back-to-back. In a random order, they indicated their perceived duration for each of the two back-to-back meetings as well as the two hour-long intervals preceding the meetings. I find a significant interaction \( F(1, 199) = 7.96, p < .01 \), such that the bounded interval was perceived as significantly shorter \( M_{\text{Bounded}} = 24.79, M_{\text{Unbounded}} = 29.44, t(199) = 3.33, p < .01 \) only when the time period was unaccounted, but not when accounted \( M_{\text{Bounded}} = 40.49, M_{\text{Unbounded}} = 40.56, |t(199)| < 1 \). This is consistent with
my explanation of attentional narrowing. When estimating the duration of accounted time, consumers are likely to focus on the task at hand rather than the task that marks the endpoint, preventing the boundary task from exerting influence over duration perception.

*Longer time intervals.* Throughout my studies, I have examined intervals of time of no more than a few hours. Thus, one may wonder whether the observed effect of boundaries might extend to longer intervals (e.g., a full day, weeks, or years). Central to my conceptual framework is the idea that a future task may draw greater attention to the interval endpoint, leading the endpoint to loom nearer in time. Importantly, a task may reasonably draw much less attention when it is far out into the future. As such, when a longer interval of time ends in a scheduled task (e.g., a doctor’s appointment at the end of the week), it may no longer exert influence over time perception for the preceding interval. Such an examination of interval length may pose a fruitful avenue for future research.

*Deadlines.* In my studies, I consistently find that consumers are less willing to spend their time once it is bounded by a scheduled task. However, situations may exist where one might expect the opposite such that an upcoming task and the perception that time is short increases consumers’ motivation to perform a target task. One such instance is when the boundary task serves as a deadline, or when the target task must be completed prior to the start of the scheduled task (Ariely and Wertenbroch 2002). In my studies, I have examined the consumption of target tasks that are not directly related to the boundary task, thus not posing the need to have a task completed before the boundary. If, instead, the target task was something that must be completed prior to the scheduled task, there is reason to expect boundaries to instead increase the likelihood
of completing the task.

To test this notion, I asked participants to imagine that they were taking a night class. They read that it was 6:00pm and that their class either met at 7:00pm that night (bounded) or the next night (unbounded). Half the participants also read that they needed to complete a 45-minute reading before class. The other half were told that the 45-minute reading was for their job, and was thus unrelated to the class. All participants indicated how likely they would be to complete the 45-minute task during the next hour (1 = very unlikely, 7 = very likely). I found a significant interaction (F(1, 325) = 14.88, p < .001), such that willingness to engage in the target task decreased prior to an unrelated boundary task (MBounded = 4.24, MUnbounded = 4.99, t(325) = 2.87, p < .001), but increased when the boundary task served as a deadline (MBounded = 6.03, MUnbounded = 5.35, t(325) = 2.59, p = .01). Thus, I find that while often an upcoming task reduces willingness to spend the available time, this tendency is not universal and might even reverse when the upcoming boundary task serves as a deadline.

*Naturally occurring boundaries.* An interesting avenue for future research may be to examine boundaries that naturally occur. For example, for some consumers, 5:00pm may be a natural boundary because they leave work each day at that exact time, suggesting that consumption of the hour from 4:00pm to 5:00pm may be different from other hours throughout the day. While my theory would predict no differences for naturally occurring (vs. scheduled) boundaries, testing of this prediction is beyond the scope of the current essay.

2.8.6 Implications
**Marketing implications.** My results have important implications for marketers. Marketers are often interested in managing consumers’ time perceptions. While wanting warranty descriptions to feel expanded, they might desire delivery times to feel contracted. My research demonstrates that how the interval is described (whether bounded or unbounded) may systematically influence how subjectively long the interval feels, providing venues for marketers to manage consumers’ time perceptions.

Additionally, many consumer experiences have multiple components, including both scheduled activities as well as intervals of free time (e.g., amusement parks, zoos, etc.), creating a need to maximize consumer satisfaction over these more complex experiences. For ticketed attractions, marketers want to manage the supply chain such that consumers are on time but do not arrive too early, which may cause congestion, bottlenecks, or confusion. In the present research, I find that the time leading up to a ticketed (and thus scheduled) task may feel contracted, potentially altering the way that consumers use that time or leading consumers to gather earlier than they might otherwise. As such, marketers may benefit from providing a rough window rather than an exact time for ticketed events within these multi-component experiences.

**Consumer welfare.** My results also offer important implications for consumers looking to get the most from their available time, especially because how consumers perceive and spend their time is directly tied to happiness and well-being (Aaker, Rudd, and Mogilner 2011). Further, one of the reasons why consumers engage in scheduling is to maximize and expand their available time as well as to fit in more of their desired activities. In this chapter, I find that scheduling can instead lead time to feel contracted. My results therefore indicate that if the goal
is to maximize time perception and consumption, consumers can benefit from minimizing the number of temporal boundaries (e.g., through back-to-back vs. intermittent scheduling). Note that consumers may have many other goals for their day, such as maintaining an optimal level of mental resources across scheduled tasks and unaccounted time, maximizing efficiency of time use, etc., where scheduled tasks may serve as necessary interruptions to break up the day (Nelson and Meyvis 2008). Future research could work to uncover the net effect of different organizational strategies to inform these multiple goals.

2.9 Appendices

APPENDIX 2.1 – STUDY 1 INSTRUCTIONS

Are you planning to attend the presidential address at 4:45pm?

☐ Yes  ☐ No  ☐ Maybe

How long do you consider the duration between now and 4:45pm? (check a circle)

[Scale of time]

APPENDIX 2.2 – STUDY 3 CALENDAR STIMULI
APPENDIX 2.3 – STUDY 5C INSTRUCTIONS

Panel A: Calendar fill-in instructions

We are interested in how people use calendars and organize their scheduled tasks throughout the day.

In the calendar below, please enter all of your scheduled meetings and appointments for tomorrow. Only include those meetings and appointments that are specifically scheduled with a specific and firmly set start time (e.g., Dr. appointment at 3:00pm, lunch at 12:00pm, starting work at 9:00am, meeting at 1:30pm, etc.). Included meetings and appointments should be those that have a fairly strict start time and for which you would plan to be on time.

<table>
<thead>
<tr>
<th>Time</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8am-9am</td>
<td></td>
</tr>
<tr>
<td>9am-10am</td>
<td></td>
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<tr>
<td>10am-11am</td>
<td></td>
</tr>
<tr>
<td>11am-12pm</td>
<td></td>
</tr>
<tr>
<td>12pm-1pm</td>
<td>Transition &amp; Travel</td>
</tr>
<tr>
<td>1pm-2pm</td>
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<tr>
<td>2pm-3pm</td>
<td></td>
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<tr>
<td>3pm-4pm</td>
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<tr>
<td>4pm-5pm</td>
<td>Transition &amp; Travel</td>
</tr>
<tr>
<td>5pm-6pm</td>
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<tr>
<td>6pm-7pm</td>
<td></td>
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<tr>
<td>7pm-8pm</td>
<td></td>
</tr>
</tbody>
</table>

Panel B: Transition time instructions

Q1) At what time, specifically, does each of the scheduled tasks you entered start?

Q2) If you will have any preparation or transition immediately before your plans (e.g., getting dressed, travelling, etc.), what time will you start those preparations?

For example, if you have plans to meet a friend at 6:00pm, but will start getting ready to head over there at 5:30pm, then you would select "5:30pm"

Please select the same time as above if you do not have any preparation or transition immediately before your plans (e.g., in the example, the response for both times would be "6:00pm")

APPENDIX 2.4 – STUDY 5C DEPENDENT MEASURE
Thank you for completing this study!

Based on your responses, you may qualify for an additional HIT. We are recruiting participants for two additional academic studies that will be running tomorrow (Wednesday December 21st). If you are interested, you can sign up for the chance to be included in one of these studies.

In the additional, optional studies, we are interested in your personality, opinions, values, and behaviors. As such, you will be asked a series of questions about how you tend to think, feel, and behave.

We are looking for participants to complete one of the two studies:
(1) either a 30 minute brief version of the study for $2.50
(2) or the 45 minute full study for $5.00

Both of these studies will run for a limited time - from 9:30am-10:30am tomorrow - and must be completed within that time. If you qualify, you will receive an email alerting you when the study you chose is posted on MTurk tomorrow.

If you qualify, would you like to sign up to participate in one of these studies from 9:30am-10:30am tomorrow?

- 30 minute study that pays $2.50
- 45 minute study that pays $5.00
- Neither study

2.10 Supplemental Studies

SUPPLEMENTAL STUDY 2.1 – TEMPORAL CONTRACTION VS. EXPANSION

This study includes a baseline measure in which participants estimated the duration of an average hour in order to further test temporal contraction (vs. expansion). I predicted that a bounded interval would feel shorter than both a baseline and an unbounded interval.

Methods and procedure. One hundred twenty one MTurk participants took part in this 3-cell (Interval: baseline vs. bounded vs. unbounded) within subjects design. Participants were provided with a calendar and then indicated their perceived duration (using the same scale as in the main studies) for two intervals throughout the day in a random order. One of these intervals
(9:00am-10:00am) was unbounded, while the other (10:00am-11:00am) was bounded by a scheduled meeting. Participants also indicated the perceived duration of an average hour (“On average, how long do you consider the duration of an hour?”) as a baseline estimate. Order was counterbalanced such that half of the participants evaluated the specific bounded and unbounded hours first and the other half provided their baseline time perception first.

Results. I found a significant within subjects effect (F(1,120) = 8.88, p < .01), such that the bounded interval (M = 25.38) was perceived as significantly shorter than the unbounded interval (M = 29.20, t(120) = 2.89, p < .01) as well as the baseline (M = 29.26, t(120) = 2.98, p < .01). Importantly, the unbounded interval did not significantly differ from the baseline (|t(120)| < 1). Thus, I find that a bounded interval is subjectively contracted compared to both a baseline and an unbounded interval, which did not differ from each other.

SUPPLEMENTAL STUDY 2.2 – DESIRABLE & UNDESIRABLE BOUNDARIES

In this study, I next sought to demonstrate that both desirable and undesirable boundary tasks contract time. This also helps to provide further evidence for the role of the endpoint as a driver of temporal contraction while also ruling out the potential effect of savoring for the boundary activity. That is, it could be that time feels shorter as consumers excitedly anticipate the scheduled task (Loewenstein 1987). If so, then one would expect the dread associated with anticipating a negative task to show the opposite (or no) effect.

Method and procedure. One hundred and fifty one MTurk participants took part in this 3-cell (Boundary task: desirable vs. undesirable vs. none) between subjects design. Participants in
the no boundary condition imagined that they had an hour available later today. Those in the boundary task conditions imagined that they had an hour available later today either before they needed to get ready to go to dinner with friends (desirable task) or before they needed to head to a dentist appointment (undesirable task). All participants then indicated their subjective time perception for the hour-long interval on the same subjective sliding scale used in prior studies.

*Results.* I found a significant effect of boundary task \( F(2, 148) = 8.88, p < .01 \) on perceived time. Planned contrasts revealed that the same length interval was rated as significantly shorter if it preceded a desirable boundary task \( (M = 30.30) \) than if there was not a boundary task \( (M = 45.06, t(148) = 3.09, p < .01) \). Further, as predicted, the time prior to an undesirable boundary task was also perceived as significantly shorter compared to no boundary task \( (M = 25.86, t(148) = 4.03, p < .01) \). While the undesirable task led to directionally greater temporal contraction than the desirable task, this difference was not significant \( (|t(148)| < 1) \). Thus, bounded time subjectively contracted irrespective of the desirability (and possible savorability) of the task.

**SUPPLEMENTAL STUDY 2.3 – DESIRABLE & UNDESIRABLE TARGET TASKS**

In this study, I sought to demonstrate that participants shy away from both positive and negative experiences during bounded time. In particular, if time feels insufficient for completing activities prior to boundary tasks, as I argue, then consumers should become less likely to engage in both fun, desirable tasks as well as unpleasant, undesirable tasks during bounded time.

*Method and procedure.* Two hundred ninety nine MTurk participants took part in this 2
(Interval: bounded vs. unbounded) x 2 (Activity: desirable vs. undesirable) between subjects design. All participants imagined that it was 7:00pm on a weeknight and that either their friend was coming by at 8:00pm (bounded) or that they did not have any plans for the evening (unbounded). Participants then indicated their likelihood of working on a “45 minute online training to complete for work that you've been dreading” (undesirable) or of watching a “45 minute TV show that you've been looking forward to watching” (desirable) during the next hour (1 = extremely unlikely, 7 = extremely likely).

**Results.** I found the anticipated significant main effect of boundary task ($F(1, 295) = 27.08 , p < .01$) and no significant interaction ($F(1, 295) = 1.88, p > .10$). In particular, participants were less likely to take part in both the desirable ($M_{\text{Bounded}} = 5.10, M_{\text{Unbounded}} = 6.30, t(295) = 4.63, p < .01$) and the undesirable activity prior to a boundary task ($M_{\text{Bounded}} = 4.62, M_{\text{Unbounded}} = 5.32, t(295) = 2.73, p < .01$).

**SUPPLEMENTAL STUDY 2.4 – SHORT VS. LONG TARGET TASKS**

In this study, I sought to conceptually replicate the finding that consumers become less likely to engage in relatively long tasks but are just as likely to take part in relatively short tasks.

*Method and procedure.* One hundred and sixty one participants took part in this 2 (Interval: bounded vs. unbounded) x 2 (Activity: short vs. long) between subjects study. Participants imagined that they had an hour available (unbounded) or an hour available before leaving to get dinner with friends (bounded). Participants in the short activity condition read that they had only a few pages left on a book that they are reading whereas those in the long target
activity condition read instead that they had only a few chapters left to read. Participants then indicated how likely they would be to read their book during the next hour (1= extremely unlikely, 7 = extremely likely).

Results. I found the predicted significant interaction (F(3, 157) = 4.02, p < .05). Conceptually replicating the results of Study 5a, participants were less likely to engage in the relatively long task of reading a few chapters of a book during a bounded interval (M_Bounded = 4.59, M_Unbounded = 5.77, t(157) = 3.50, p < .01) but were just as likely to engage in the shorter task of reading a few pages (M_Bounded =5.70, M_Unbounded = 5.93, |t(157)| < 1).

References


Ariely, Dan, and Klaus Wertenbroch (2002), “Procrastination, Deadlines, and Performance: Self-


Faro, David, France Leclerc, and Reid Hastie (2005), “Perceived Causality as a Cue to Temporal Distance,” Psychological Science, 16 (9), 673-677.


*Psychological Science, 21* (9), 1348–54.


