What Happens When You Let the Hunger Games Loose? An Evaluation of Temptation Bundling as a Behavior Change for Good Strategy in the StepUp Program

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Abstract

Temptation bundling, an intervention involving the coupling of instantly gratifying activities with activities that provide long-term benefits but require some exertion of willpower, is a novel behavior change strategy. To date, despite the short and long-term benefits of such an approach, only one study has evaluated its efficacy in the field. This work found that restricting participants’ listening of tempting audiobooks to the gym improved participants’ gym visitation rates. In a subsequent forthcoming mega-study, receipt of a free audiobook, even when participants received no explicit instruction on temptation bundling as a behavior change strategy, again drove improvements in participants’ gym visits. These mega-study results raise an important question regarding whether temptation bundle can be intuited and applied as a motivational strategy even without explicit instruction. Two online surveys were conducted in which participants reviewed content identical to that of the mega-study sign-up and assessed the audiobook’s motivational value (Study 1) and intended use (Study 2). Findings indicate the strategy of temptation bundling can both be deduced from the mere receipt of a free audiobook (Study 2), and viewed as a valuable motivator of gym attendance (Study 1). Both studies support the value of temptation bundling as a behavior change technique, and offer suggestive evidence of its use as a potentially scalable, low-cost intervention to promote behavior change for good.

Keywords
temptation bundling, behavior change, want-should conflicts, reminders, warm-glow effects, self-control, personal rules, exercise, habits, audiobooks, habit-building

Disciplines
Applied Behavior Analysis | Behavioral Economics | Industrial and Organizational Psychology | Public Health Education and Promotion

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WHAT HAPPENS WHEN YOU LET THE HUNGER GAMES LOOSE?
AN EVALUATION OF TEMPTATION BUNDLING AS A BEHAVIOR CHANGE FOR GOOD STRATEGY IN THE STEPUP PROGRAM

By

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An Undergraduate Thesis submitted in partial fulfillment of the requirements for
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THE WHARTON SCHOOL, UNIVERSITY OF PENNSYLVANIA
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ABSTRACT

Temptation bundling, an intervention involving the coupling of instantly gratifying activities with activities that provide long-term benefits but require some exertion of willpower, is a novel behavior change strategy. To date, despite the short and long-term benefits of such an approach, only one study has evaluated its efficacy in the field. This work found that restricting participants’ listening of tempting audiobooks to the gym improved participants’ gym visitation rates. In a subsequent forthcoming mega-study, receipt of a free audiobook, even when participants received no explicit instruction on temptation bundling as a behavior change strategy, again drove improvements in participants’ gym visits. These mega-study results raise an important question regarding whether temptation bundle can be intuited and applied as a motivational strategy even without explicit instruction. Two online surveys were conducted in which participants reviewed content identical to that of the mega-study sign-up and assessed the audiobook’s motivational value (Study 1) and intended use (Study 2). Findings indicate the strategy of temptation bundling can both be deduced from the mere receipt of a free audiobook (Study 2), and viewed as a valuable motivator of gym attendance (Study 1). Both studies support the value of temptation bundling as a behavior change technique, and offer suggestive evidence of its use as a potentially scalable, low-cost intervention to promote behavior change for good.

Keywords: temptation bundling, behavior change, want-should conflicts, reminders, warm-glow effects, self-control, personal rules
INTRODUCTION

Background

Most people wrestle with the choice between an action they should take and an action they want to take – many times a day, every day. Exerting self-control in these situations is a struggle, and often, people’s wants win out over their shoulds. A person on a diet, for instance, may give into eating the chocolate cake after dinner; an employee set on building up his emergency fund may instead spend his stimulus check on a spiffy new electronic; and a student hoping to improve her grades may give in to the desire to watch another episode of a binge-worthy TV show. These want-should conflicts involve a choice between a course of action that brings immediate gratification (a want), and another that is expected to bring about important long-term gain (a should) (Milkman, Rogers, and Bazerman 2010).

This selection of immediate gratification over long-term gain can take a toll on people’s health, financial, academic, and professional outcomes over time (Boals, Vandellen, and Banks 2011; Kaur, Kremer, and Mullainathan 2010; Stavrova and Kokkoris 2017; Stromback, Lind, Skagerlund, Västfjäll and Tinghög 2017). In the health arena, for example, an estimated 40% of deaths can be attributed to repeated decisions that favor wants over shoulds when it comes to eating, drinking, smoking, exercise, sex and vehicle safety (Schroeder 2007). In addition to causing people to make choices counter to their long-term well-being, self-control issues themselves can pose financial burdens. People, for instance, can lose money from overestimating the likelihood that they will engage in should activities in the future (DellaVigna and Malmendier 2006): in a study on gym attendance (a should activity) at U.S. health clubs, DellaVigna and Malmendier (2006) found that gym members, opting for an unlimited rather than pay-per-visit membership, forwent average total savings of $600.
In light of personal and social costs borne by self-control problems, policymakers and behavioral scientists alike have deployed a wide range of interventions designed to encourage *should* choices (see Duckworth, Milkman, and Laibson 2018 for a review). To tackle self-control problems, current interventions largely focus on encouraging a person to choose the latter, less enticing option (the *should*). These interventions, therefore, assume the mutual exclusivity of *should* and *want* options. A new and promising intervention approach is temptation bundling, a technique coined by Milkman, Minson, and Volpp in 2014 in their seminal work, “Holding The Hunger Games Hostage at the Gym: An Evaluation of Temptation Bundling.” Temptation bundling is defined as the strategic combination of *want* activities with *should* activities.

By design, temptation bundling improves the attractiveness of *should* activities, while simultaneously reducing the guilt often experienced in the pursuit of *want* activities, enabling the actor to pursue both activities in tandem. For example, a temptation bundler needing to file taxes may choose to combine filling out necessary paperwork with ordering in his favorite cuisine; or, wanting to exercise, he may combine aerobic exercise with listening to a captivating audiobook. In Milkman et al.’s (2014) work, the latter activity set was explored: Milkman et al. (2014) found a treatment group *restricted* to listening to audiobooks at the gym visited the gym significantly more often than a group provided no audiobook for seven weeks, and were indeed willing to pay for a device restricting audiobook listening to the gym. However, this study was not significantly powered to detect an effect of the second treatment group in which participants were merely encouraged to temptation bundle but able to access their tempting audiobooks outside the gym, leaving open important future questions: most relevant to this present work, whether individuals might be able to temptation bundle with little to no limited agentic direction or constraints.
Milkman et al. (2020) in their forthcoming publication returned to the gym setting to conduct a mega-study exploring, along with 20 other pre-registered experiments (N\text{total} = 62,747), whether individuals could temptation bundle \textit{on their own} to improve their exercise habits (N = 6298). This study, hereafter referred to as the StepUp Program, took place from March 2018 through January 2019, in partnership with 24 Hour Fitness. Notably, this study was well powered to detect differences between treatment groups, and has identified temptation bundling as one of the highest performing experiments in the mega-study. In StepUp, providing gym members access to a free audiobook increased their weekly gym visits by an estimated 0.24 visits during the program’s duration and in the month afterward (SE = 0.097, \(p = .010\)) (Kirgios et al. 2020).

Surprisingly and most important to this present investigation, gym members who received a free audiobook without explicit instructions on how to temptation bundle made an estimated 0.16 more average weekly gym visits than those in a control condition who did not receive a free audiobook (SE = 0.079, \(p = .041\)) (Kirgios et al. 2020). This second finding was contrary to pre-registered hypotheses, and warranted a follow-up, ex-post analysis. This ex-post analysis is both the topic of this thesis, and a part of Kirgios et al. (2020).

**Present Investigation and Contribution to the Literature**

This thesis, as also detailed in Kirgios et al. (2020), investigates two key ideas: firstly, whether temptation bundling may still motivate individuals even without explicit encouragement to practice the strategy; secondly, the necessity of explicit instruction for participants to \textit{intuit} temptation bundling in practice. To explore these two ideas, two online surveys were conducted in which participants were provided content identical to the StepUp onboarding process for the treatment conditions of interest, and asked about the audiobook’s motivational value (Study 1) and intended use (Study 2) (IRB Protocol: 843527).
Study 1 findings indicate participants believed the free audiobook’s usage at the gym motivated gym attendance. Study 2 findings suggest participants could intuit without any additional information about the free audiobook that it was intended for use at the gym. Such findings offer evidence regarding the value of temptation bundling as a behavior change technique, and indicate its deployment as a behavior change tool perhaps need not involve explicit digital instruction.

This thesis’ study of exercise-related motivations and intentions aims to shed light on how a critical public health issue might be addressed: Fewer than half of American adults exercise sufficiently, and 30% of American adults report engaging in no exercise whatsoever (Department of Health and Human Services 2018 A-4). Recent estimates suggest that physical inactivity accounts for 9% of premature mortality, and a 25% increase in worldwide physical activity levels would be enough to avert 1.3 million deaths each year (Lee et al. 2012).

The remainder of this proposal will be organized as follows. In the following section, this thesis highlights how the present literature points to the possibility that temptation bundling can facilitate behavior change if offered as simply a suggestion. In sections three and four, this proposal will discuss survey methods and data analyses. A discussion of findings and summary concludes.

LITERATURE REVIEW

Interventions Addressing the Want-Should Conflict

Many interventions have encouraged people’s selection of should activities. Such interventions rely on people’s self-knowledge (O’Donoghue and Rabin 2011), leaning on their ability to anticipate future temptations and their willingness to engage in self-control strategies to help themselves resist those temptations. For instance, interventions have encouraged people to
commit to *should* activities like saving in advance (Thaler and Benartzi 2004), to impose future penalties on themselves for failing to engage in a *should* activity like exercise (Royer, Stehr and Sydnor 2015), or to avoid situations that might make it particularly tempting to choose *want* activities like screen time over *should* activities like studying (Duckworth, White, Matteucci, Shearer, and Gross 2016). While these interventions have significantly improved individual selection of *should* activities, nonetheless, selection of *should* activities over an enticing action that brings short-term pleasure can be cognitively taxing (Randles, Harlow, and Inzlicht 2017).

Other interventions have attempted to improve the attractiveness of selecting *should* activities, helping to reduce mental friction this choice may require. For example, in a series of studies, Woolley and Fishbach (2016) encouraged participants to shift their attention to the immediately gratifying elements of *should* activities such as exercise and healthy eating rather than focusing on their long-term benefits (e.g. longevity, weight loss). This nudge led people to make more *should* choices, exercising for longer and eating healthier food. In a related field experiment, the authors found that encouraging students to enjoy snacks, music, and colorful markers while completing challenging math problems led to greater persistence than merely encouraging problem completion (Woolley and Fishbach 2016).

Likewise, interventions employing the use of gamification, the use of game design elements in non-game contexts (Deterding, Dixon, Khaled, and Nacke 2011), have attempted to incorporate immediate rewards into pursuit of less immediately gratifying long-term goal pursuit. For instance, game-like features such as points and leaderboards have been applied to increase peoples’ daily step counts (Patel et al. 2017; Patel et al. 2019; Zuckerman and Gal-Oz 2014), as well as their academic and professional productivity and engagement (Ashraf, Bandiera and Lee 2013; Bandiera, Barankay and Rasul 2011; Chou and He 2016; Gallus 2016; Witt, Scheiner and
Robra-Bissantz 2011). However, it is notable that many gamified interventions have fallen short, or in fact produced deleterious outcomes for some participants (Ashraf, Bandiera and Lee 2013) (Hanus and Fox 2015) (Borjas and Doran 2015). Particularly, in gamified interventions, when making an activity more “fun” disturbs an individual’s sense of personal agency, otherwise effective gamified interventions have been found to backfire (Mollick and Rothbard 2014).

**Individual Agency and the Want-Should Conflict**

Previous findings suggest there is value to a temptation bundling intervention that best preserves individual agency. For one, individual autonomy is important to making activities more enjoyable (Mollick and Rothbard 2014) and encouraging goal persistence (Locke and Latham 2002). Secondly, when temptation bundling permits an individual to self-select which want activity they prefer to combine with a should activity, they may better personalize optimize their temptation bundling experience (see Woolley and Fishbach, Study 3, 2016, for evidence that personal selection important). And thirdly, this approach offers obvious benefits to agents seeking a solution to implement at scale – for instance, gyms without an ability to provide overnight lockers to enforce temptation bundling may employ a simple digital intervention as in StepUp; or insurance companies looking to use the approach to promote medication adherence may be able to do so without an ability to monitor and discipline individual activity.

The StepUp Program took a light-handed approach to temptation bundling. As compared to Milkman et al.’s (2014) approach, all treatment conditions of interest in the StepUp Program required individuals to temptation bundle on their own (Milkman et al., 2020): StepUp participants were simply encouraged to download an audiobook from Audible.com as they signed up. However, the individual maintained full discretion over whether or not to download the audiobook, and whether to listen and/or restrict their listening to the gym.
The approach builds on a body of evidence that teaching people new skills or practical tricks can empower them to make better choices on their own (Drexler, Fischer, and Schoar 2014; Sedlmeier and Gigerenzer 2001; for a review of “boosts,” see Hertwig and Grüne-Yanoff 2017), and that individuals can craft and successfully follow personal guidelines that help them exert self-control (Ainslie 1992; Ainslie 2001; Benabou and Tirole 2004; Cheema and Soman 2006; Grady, Goodenow and Borkin 1988; Thaler 2000; Wertenbroch 1998). For instance, previous work has found individuals can self-impose constraints on purchases of vice items such as cigarettes (Wertenbroch 1998), assign activities to categories and restrict spending to implicit category-level budgets on their own initiative (Thaler 2000), and reward themselves for successful completion of should activities to encourage their own goal-oriented behaviors (Grady, Goodenow and Borkin 1988).

Interestingly, in the StepUp condition in which participants simply received a free audiobook when they signed up for StepUp, they also were responsible for ascertaining the audiobook’s purpose as a temptation bundling tool itself. This possibility is supported by previous findings that people can intuit information about a person or organization’s intentions or recommendations based on context alone (Hilton 1995; McKenzie, Liersch, and Finkelstein 2006; Tannenbaum, Valasek, and Knowles 2013), and adjust behaviors accordingly (Kay, Wheeler, Bargh, and Ross 2004; Prinsen, de Ridder, and de Vet 2013).

In summary, a review of the previous literature posits the following: temptation bundling builds on previous approaches to resolving the want-should conflict by making should activities more immediately appealing. Furthermore, its deployment in StepUp builds on previous work that people can be sophisticated in their pursuit of behavior change and perhaps motivated by a maintained sense of personal agency. They may, indeed, follow through on temptation bundling
without strict enforcement or perhaps even instruction.

**Alternative Explanations for StepUp Program Results**

Finally, while there is reason to believe participants can temptation bundle on their own and perhaps ascertain its usage in the absence of any additional information, this review concludes with a review of alternative explanations for the StepUp Program findings on the impact of receiving a free audiobook. Critically, information tying StepUp participants’ listening patterns to gym visits is not available.

While previous literature would suggest that participants may have still been motivated to temptation bundle in the StepUp Program when they received a free audiobook, we turn briefly to alternative explanations for such a result. For one, receiving the free audiobook could have induced positive feelings, “warm glow,” or gratitude toward the gym for participants, which made gym visits more appealing (Andreoni 1995; Armenta, Fritz, and Lyubomirsky 2017; Falk 2007; Isen, Shalker, Clark, and Karp 1978; List and Lucking-Riley 2002). Similarly, listening to or recalling the free audiobook outside the gym may also have kept the gym top-of-mind for participants, reminding them to visit the gym more often (Bordalo, Gennaioli, and Shleifer 2013; Chetty, Looney, and Kroft 2009; Dohmen, Falk, Huffman, and Sunde 2006; Finkelstein 2009). Study 1 dissects how these various motivators may have influenced StepUp outcomes.

**STUDY 1: EXPLORING STEPUP PARTICIPANT MOTIVATIONS**

**Overview**

In both Study 1 and Study 2, the surprising results uncovered in the StepUp Program were investigated: as previously addressed, in StepUp, participants in both a condition in which they received a free audiobook (*simple free audiobook*), as well as participants in a condition intended to produce a treatment effect involving both a free audiobook offering and instruction
on how to temptation bundle (free audiobook with encouragement to temptation bundle), increased their average gym visits during the program.

In Study 1, what might have motivated participant gym visits in each of our three conditions of interest (simple free audiobook, free audiobook with encouragement to temptation bundle, and control) was explored. In Study 2, whether participants could ascertain the practice of temptation bundling without explicit instruction was investigated, and will be described in the next section. Prior to launch survey launch, a pilot survey (N = 200) on Amazon mTurk was run to confirm question content was clear and proper statistical power would be achieved.

Methods

Participants. Three hundred and four students at an East Coast university completed Study 1 in exchange for $5.00 and a potential $1.00 bonus, paid via Amazon gift card. Like StepUp participants, all survey takers were current gym members because all students at this university are automatically members of the university’s gym. Students were recruited via an email message from the university’s behavioral lab. The email message contained a link to the survey, and the subject line read, “Take a Short Survey for $5 plus a potential bonus.” Participants were told they would be taking a survey about exercise habits. Participant demographic characteristics are reported in Table 1.

Procedure. This experiment was a single condition scenario study preregistered on AsPredicted.org (https://aspredicted.org/d5qx7.pdf).

Participants first read a description of the StepUp Program in which they learned that StepUp was a 28-day program offered for free to help people build positive health habits. They learned that they would see screenshots that mirrored what actual StepUp participants saw when they signed up for the program. They were informed that after walking through the screenshots
of the StepUp Program, they would make some predictions about how StepUp participants would have reacted to the program. To encourage participants to pay close attention to the screenshots, participants were told they would receive a $1.00 bonus if they correctly answered comprehension check questions based on the what they learned about the StepUp Program.

Participants were then randomized into one of the three treatment conditions. In each condition, participants viewed screenshots of the online sign-up and onboarding process that matched the screens that actual StepUp Program participants in their respective experimental condition saw when they completed the registration survey.

In the control condition, survey participants saw the following StepUp screens: the sign-up screen, the welcome and workout scheduler screen, and the termination screen. Notably, they did not learn about temptation bundling or free audiobook receipt. In the simple free audiobook condition, participants saw the same information as participants in the control condition, but they also learned that StepUp participants received free audiobooks from Audible.com and could retrieve this free audiobook from clicking on a provided link (Figure 1). In the free audiobook with encouragement to temptation bundle condition, participants also saw the same content as participants in the simple free audiobook condition, but they also learned about the concept of temptation bundling, that StepUp program participants received customized temptation bundling recommendations, and that StepUp program participants could have signed a pledge to temptation bundle (see Figure 2 for sample temptation bundling content).

To encourage participants to think critically about the StepUp Program prior to collection of the key dependent variables, participants were asked to predict how many days a week (between zero and seven) they believed typical StepUp participants went to the gym.
**Dependent Variables.** The dependent variables of interest were participants’ ratings of various potential motivators of gym visits during the StepUp Program. Participants were asked to rate the likelihood that a series of potential motives encouraged StepUp participants to visit the gym on a scale from 1 (“Very unlikely”) to 5 (“Very likely”). The items, presented in matrix format, were as follows: "Participants wanted to listen to an audiobook while working out at the gym" (temptation bundling), "Participants felt grateful to the gym" (gratitude), “Participants were reminded to visit the gym whenever they listened to an audiobook" (reminders through association), “Participants felt positively about the gym” (positive feelings), and “Participants wanted to earn money for going to the gym” (distractor item, not included in preregistration) (for graphic depiction, see Appendix A: Screen 19).

**Other Measures.** Exploratory measures of participants’ predictions about how they themselves would have behaved if they had joined the StepUp Program were collected. In both the free audiobook with encouragement to temptation bundle and simple free audiobook conditions, participants were asked if they would have downloaded the free audiobook offered by the StepUp Program (Yes/No), and where they would listen to the audiobook if they had downloaded it (“For entertainment at the gym,” “For entertainment outside the gym,” and/or “For entertainment whenever”).

At the end of the survey, participants indicated how frequently they exercised, and provided optional demographic information regarding their age, gender, and ethnicity. All survey materials and screenshots are available in Appendix A (pages 36-54).
Results and Discussion

**Main Analysis and Discussion.** Ninety-eight percent of survey-takers passed the comprehension check.¹ As preregistered, four t-tests were conducted to compare the ratings of each of the four predicted gym visit motivators. Importantly, the main preregistered analysis conducted combined the results from both simple free audiobook and free audiobook with encouragement to temptation bundle (referred to as free audiobook combined) to ascertain the incremental impact of receiving a free audiobook on StepUp outcomes in tandem with the main analyses in Kirgios et al. (2020) Study 1.

As depicted in Table 2, consistent with theorizing and ex ante explanation for Study 1B results in Kirgios et al. (2020), participants anticipated that receiving a simple free audiobook in the StepUp program would cause gym members to temptation bundle and, in turn, visit the gym more than the control condition (Δ = 0.398; t(204) = 2.55, p = .011). Furthermore, participants felt receiving a free audiobook would cause participants to think about, and therefore, visit the gym more than participants in the control condition (Δ = 0.523; t(204) = 3.19, p = .002). There were no significant differences between participants’ assessments of how gratitude (Δ = 0.029; t(204) = 3.19, p = .832) or positive feelings (Δ = -0.09; t(204) = -0.85; p = .396) would increase exercise for participants over and above the control condition. Findings indicate that the act of listening to the free audiobook, rather than its function as a mere gift, was seen as a more likely motivator of participant gym activities.

**Exploratory Analyses.** As per the pre-registered exploratory analysis, four additional t-tests were conducted to compare both free audiobook conditions’ ratings of gym visit motivators. Results

¹ Data from all survey takers, including those who failed the comprehension check, was included. Results were not affected by the inclusion or exclusion of the six participants who failed the comprehension check.
from the *free audiobook with encouragement to temptation bundle* condition generally moved in parallel with the *simple free audiobook* condition, though participants expected gym members to temptation bundle more ($\Delta = 0.427; t(197) = 2.82, p = .005$) and think about the gym more ($\Delta = 0.459; t(197) = 2.79, p = .006$) in the *free audiobook with encouragement to temptation bundle* condition than in the *simple free audiobook* condition. Pairwise comparisons between all experimental conditions are reported in Table 3 and graphically displayed in Figure 3.

Additional analyses were conducted to offer further insight into how participants’ reactions to StepUp differed by experimental condition. Two t-tests revealed no enhancing effect of free audiobook receipt on participant predictions of weekly workouts: in fact, those in the control condition predicted more frequent weekly workouts than both free audiobook groups (*free audiobook combined*) ($\Delta = 0.332; t(197) = -2.41, p = .017$); similarly, those who received education on temptation bundling did not predict any additional weekly gym visits beyond the predictions of the *simple free audiobook* condition ($\Delta = -0.036; t(197) = -0.256, p = .799$).

Finally, additional analyses were performed to explore how participants’ predictions for their own listening behaviors may have differed by experimental condition. In both the *free audiobook with encouragement to temptation bundle* and *simple free audiobook* condition, 60.75% of participants indicated they “would have downloaded the free audiobook” if they were in the StepUp Program ($z \approx 0, p=1.000$). When asked about their potential listening patterns, 38.78% of participants in the *free audiobook with encouragement to temptation bundle* condition indicated they would listen to the free audiobooks “at the gym”, which was not significantly different than the 27.78% of participants in the *simple free audiobook* condition who indicated they would use the free audiobook “at the gym” ($z =1.51, p=. 132$). However, while more than half of participants in the *simple free audiobook* condition indicated they would use the free
audiobook “outside the gym” (63.36%), a significantly lower percentage of participants in the free audiobook with encouragement to temptation bundle expressed an intention to use the free audiobook outside the gym (41.84%) ($z = 2.90$, $p = .004$). These additional analyses offer suggestive evidence that the far majority of StepUp participants offered a free audiobook downloaded this audiobook, and perhaps more importantly, their download patterns may not have differed by experimental condition; however, usage patterns may have differed in that participants who did not receive instruction to temptation bundle may have been more likely to have used the free audiobook outside the gym.

**STUDY 2: EXPLORING THE INTUITIVENESS OF TEMPTATION BUNDLING**

**Overview**

Study 2 explored whether temptation bundling could be ascertained as a recommend strategy without explicit instruction. In particular, it gauged whether receipt of the free audiobook alone (as in the simple free audiobook condition) might have led StepUp participants to intuit that they were expected to temptation bundle. Such a result would help illuminate why StepUp participants who simply received the free audiobook during program sign-up increased their gym visits during the intervention period.

**Methods**

**Participants.** Seventy-five students at an East Coast university completed Study 2. Subject recruitment replicated that of Study 1: University students were again recruited via an email message from the university’s behavioral lab, and received $5.00 for their survey participation and a potential $1.00 bonus, paid via Amazon gift card. Participants were told they would be taking a survey about exercise habits. Demographic statistics are again reported in Table 1.
Procedure. Study 2 was a single condition survey. All participants who completed this survey viewed screenshots of registration content for the *simple free audiobook* condition from the StepUp Program. Importantly, the only content participants reviewed related to audiobooks was a screen informing participants of an audiobook promotion and instructions on how to download their free audiobook on Audible.com (Figure 1). This study was preregistered on AsPredicted.org (https://aspredicted.org/g39ff.pdf).

As in Study 1, survey participants were informed that they would see screenshots of the content that real StepUp participants saw when they signed up, and that they would be asked “how [they] think StepUp Program participants would have reacted to the program.” To encourage participants’ attentiveness to StepUp Program content, participants were again told they would receive a $1.00 bonus if they correctly answered comprehension check questions based on the what they learned about the StepUp Program.

After viewing program content, participants were asked to write an open-ended response to the question: “What do you think the StepUp Program designers hoped participants would do with the free Audible audiobooks?” This question was intended to encourage participants to reflect on the relationship between StepUp and audiobooks, and respond without any prompting, before answering the multiple choice question on the same topic. At the end of the survey, participants responded to optional demographic questions on their age, gender, and ethnicity. All survey materials and screenshots from Study 2 are available in Appendix B (pages 55-66).

Dependent Variables. The key dependent variable was participants’ response to the following multiple choice question: “What do you think the StepUp Program designers hoped participants would do with the free Audible audiobooks they gave away as part of the StepUp Program?” Participants were offered the choice between one of three options, and could only choose one:
“for entertainment at the gym”, “for entertainment outside the gym”, or “for entertainment whenever they wanted.” The dependent variable was a binary indicator for whether or not a given participant reported believing that StepUp participants were meant to use the free audiobook at the gym (1 = “For entertainment at the gym”, 0 = “For entertainment outside the gym” OR “For entertainment whenever they want it.”)

**Other Measures.** As part of the pre-registered exploratory analysis, participants’ open-ended responses to what they thought StepUp Program designers “hoped participants would do with the free Audible audiobooks” was coded. Three independent raters blind to the experiment’s purpose coded whether a given response indicated subjects thought participants were meant to use the free audiobook at the gym (1 = use at the gym, 0 = all other responses) (see Appendix C, page 67 for coder instructions).

**Results and Discussion**

**Analysis and Discussion.** Ninety-seven percent of survey-takers passed the comprehension check. Of all 75 participants, 60 participants (80%) indicated that the audiobooks were intended for use “at the gym.” In comparison, 11 participants (14.67%) believed the audiobooks were intended for participant use “whenever they wanted”, and 4 participants (5.33%) indicated that the audiobooks were intended for use “outside the gym.” A proportions test comparing the proportion of participants who believed audiobooks were meant for use “at the gym” to chance (33%) yielded a statistically significant difference (z = 5.60) (p < 0.001). Summary statistics are reported in Table 4.

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2 Data from all survey takers, including those who failed the comprehension check, was included.
Open-ended responses mirrored findings from the main preregistered analysis: 56 of the 75 participants, or 74.67% of participants, indicated in their open-ended responses that they felt the audiobooks were provided for use when the participant was exercising. Alternative explanations provided by the small minority of participants tended to focus on the audiobook’s commercial or intellectual value – either as a way to promote a corporate partner, or as a way of helping participants build knowledge.

Together, both quantitative and qualitative results indicate the use of the free audiobooks could easily be ascertained as a temptation bundling tool: that is, most participants understood without any explanation of temptation bundling that the free audiobooks were meant to improve the gym experience.

**GENERAL DISCUSSION**

This thesis, through two online surveys (Study 1: N = 304) (Study 2: N = 75) aimed to provide additional insight into the value of temptation bundling as a behavior change strategy. For the purpose of StepUp, this investigation dissected the role of the free audiobooks in increasing participant gym visits during the StepUp program. Findings from Study 1 help rule out the possibility that the increases in participants’ gym visits generated by the gift of a free audiobook were due to feelings of reciprocity or “warm glow” (Andreoni 1995; Armenta et al. 2017; Lyubomirsky 2017; Falk 2007; Isen et al. 1978; List and Lucking-Riley 2002) towards the gym. Instead, findings indicate they were likely driven by the audiobook’s use as a temptation bundling tool (Milkman et al. 2014), or notably, a reminder to visit the gym (Bordalo et al. 2013; Chetty et al. 2009; Dohmen et al. 2006; Finkelstein 2009). Audiobook listening, a want activity, likely motivated going to the gym, a should activity.
Further results from pre-registered exploratory analyses in Study 1 suggest education about temptation bundling as a behavior change strategy may help encourage its long-term usage. Participants who learned StepUp participants received an explanation on temptation bundling rated its use as a more likely motivator of gym visits than participants who merely learned about the program’s free audiobook. This finding may explain why, in Kirgios et al. (2020), the added encouragement to temptation bundle resulted in more durable behavior change post-intervention. Prior work has shown interventions focused on teaching skills and core competencies (see Hertwig and Grüne-Yanoff 2017) may more strongly promote lasting behavior change, and Study 1 exploratory findings map well onto such a possibility.

To note is an interesting potential benefit of a more flexible form of temptation bundling employed in the StepUp Program. While temptation bundling at present focuses on the use of the free audiobook at the gym to encourage gym visits, Study 1 suggests a “slip” and use of the audiobook outside the gym setting may indeed have reminded participants to return to the gym – participants, as found in the pre-registered analyses, believed the reminder to attend the gym may have motivated gym attendance. Hence, a flexible form of temptation bundling may offer the added benefit of keeping should activities top of mind, but further work is needed to determine how this possibility plays out in the field.

An intriguing contribution to the present literature are findings from Study 2, which suggest a surprising level of sophistication when it comes to pursuing behavior change. In Study 2, temptation bundling – particularly, the listening to audiobooks at the gym – was understood as the program’s intended use for the audiobooks. Likewise, participants who received a free audiobook in the StepUp Program, without any additional content on temptation bundling, may have deduced that they should try temptation bundling on their own. This finding adds to prior
work showing that people can create and follow their own personal rules to motivate *should* behaviors (Ainslie 1992; Ainslie 2001; Thaler 1999; Wertenbroch 1998), and further suggests that sophisticated individuals can infer new rules from their environments. However, notably Study 1 exploratory findings on downloads indicate that, while participants in both groups recognize the value of listening to the audiobook *at the gym*, those who do not receive an explanation of temptation bundling may still be more likely to listen *outside the gym*. Future research might examine whether confining *want* activities, like audiobooks, to a *should* setting, like the gym, may be helpful.

**Limitations**

Importantly, this thesis, by design, is limited in its pedagogical value. For one, the participants surveyed were undergraduate and graduate students, while participants within the mega-study were gym members across the country of an older average age group (see Table 1 for demographic characteristics comparison). Secondly, this study was limited to participant predictions of how themselves and StepUp participants might have reacted to the StepUp Program. Data on participant downloads and listening patterns of audiobooks, for instance, might offer additional insight on participants’ use of temptation bundling both with and without explicit instruction. Thirdly, the *control* condition used in Study 1 did not provide any information about free audiobooks to participants, and thus, participant predictions from the *control* condition on the motivating value of the audiobook are both difficult to extrapolate. Future work might present a control condition where participants are provided information about audiobooks, but this information is instead not tied to an exercise program.

**Implications**

More broadly, this investigation helps unravel findings from a well-powered mega study
on a nascent but promising behavior change strategy – temptation bundling. It supports the value of a cost-effective and easy-to-use version of a temptation bundling, a strategy which has only been studied in one published work to date (Milkman et al. 2014), employed in Milkman et al. (2020). Its focus on exercise habits helps shed light on an important behavioral target (Charness and Gneezy 2009) of interest to policy makers and individuals alike (Guthold, Stevens, Riley, and Bull 2018). This thesis was intended to also extend the study of temptation bundling to a non-gym setting (IRB: 842637), specifically toward the promotion of household chores, but COVID-19’s impact on university study precluded this additional research. Future work extending the study of temptation bundling to non-gym settings will offer an important contribution to the behavior change literature.

For policy makers, institutions, and individuals looking to apply temptation bundling to help others build positive health habits, this present investigation offers several important recommendations. For instance, this study suggests deploying temptation bundling as a behavior change strategy may be possible with limited outside instruction. Co-branding opportunities may exist in which those offering a “want” (e.g. a tasty treat, games, binge-worthy media), and a “should” activity (e.g. tax filing platforms, exercise studios, medical examination centers) can promote or provide these offerings in tandem, and perhaps need only describe the possibility of temptation bundling lightly (or perhaps not at all) to the target group. This approach may be preferable to offerings of free gifts to prompt behavior change, which indeed, have been flagged as potentially counterproductive (Lacetera, Macis and Slonim 2014; Mellström and Johannesson 2008). A simple “light-touch” approach may allow the strategy to be deployed with very little “nudging” on the part of the institution. The majority of individuals who indicated they would download Audible, if they were in StepUp, suggests such an offering may be appealing.
SUMMARY

Temptation bundling is a novel behavior change strategy. It uniquely combines the benefits of short-term instant gratification with the long-term benefits from building positive habits. However, its novelty leaves open interesting and illuminative questions on how the strategy can both be communicated to individuals and employed by individuals in practice. Through two online studies, this thesis highlights the promise of temptation bundling as a light-touch means of promoting behavior change with high motivational value.
Figure 1. In Study 1, both participants in the free audiobook with encouragement to temptation bundle and simple free audiobook condition saw two screens of additional content related to the StepUp Program. All participants in Study 2 also viewed this content.

Screen 8
Next, participants were asked about what activities they normally did at the gym and learned that they would receive a free audiobook from Audible.com as part of the StepUp Program.

Screen 12
Participants then saw the following screen, which provided a code that allowed them to download a free audiobook from Audible.com.
Figure 2. In Study 1, participants in the *free audiobook with encouragement to temptation bundle* condition saw this additional screen (Screen 9) along with other content related to temptation bundling (Appendix A: Screens 10-11).

Next, participants were taught how to “temptation bundle.” Temptation bundling was illustrated through both a cartoon and video.

If you would like to watch the “Learn How to Temptation Bundle Video” yourself, you may do so below.
Figure 3. Study 1 participants’ ratings of the likelihood that each of four possible motivators encouraged participant gym visits during StepUp separated by experimental condition. The error bars depict 95% confidence intervals.
## Demographic Characteristics of Participants

Table 1. Demographic characteristics of all Study 1 participants, all Study 2 participants, and StepUp participants in the temptation bundling treatment conditions of interest (*free audiobook combined*).

<table>
<thead>
<tr>
<th>Demographic Characteristic</th>
<th>Study 1</th>
<th>Study 2</th>
<th>StepUp Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>19.48 (1.73)</td>
<td>21.47 (3.97)</td>
<td>39.6 (13.4)</td>
</tr>
<tr>
<td>Female</td>
<td>73.7%</td>
<td>63.0%</td>
<td>63.5%</td>
</tr>
<tr>
<td>White</td>
<td>36.5%</td>
<td>34.7%</td>
<td>50.2%</td>
</tr>
<tr>
<td>Black</td>
<td>18.8%</td>
<td>18.7%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Asian</td>
<td>43.4%</td>
<td>41.3%</td>
<td>12.3%</td>
</tr>
<tr>
<td>Other race</td>
<td>7.2%</td>
<td>5.3%</td>
<td>35.2%</td>
</tr>
<tr>
<td>Sample size</td>
<td>304</td>
<td>75</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Hispanic, American Indian or Alaskan Native, Native American, and Hawaiian are included in the “Other race” category. In the StepUp Program, participant’s race was inferred using their first name, last name, and Census data (following Morton, Zettelmeyer, and Silva-Risso, 2003, and Berger and Milkman, 2012).*
Study 1 Preregistered Results

Table 2. Per pre-registration, the *free audiobook combined* and *control* participants’ average scores for the likelihood each motivator encouraged StepUp participants’ gym visits.

<table>
<thead>
<tr>
<th>Motivator</th>
<th>Free audiobook combined likelihood rating</th>
<th>Control likelihood rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Participants wanted to listen to an audiobook while working out at the gym” (<em>temptation bundling</em>)</td>
<td>3.15*** (1.09)</td>
<td>2.54*** (1.14)</td>
</tr>
<tr>
<td>“Participants felt grateful to the gym” (<em>gratitude)</em>&lt;sup&gt;3&lt;/sup&gt;</td>
<td>3.28 (1.03)</td>
<td>3.25 (0.92)</td>
</tr>
<tr>
<td>“Participants were reminded to visit the gym whenever they listened to an audiobook” (<em>reminders through association</em>)</td>
<td>3.22*** (1.18)</td>
<td>2.47*** (1.15)</td>
</tr>
<tr>
<td>“Participants felt positively about the gym” (<em>positive feelings)</em>&lt;sup&gt;3&lt;/sup&gt;</td>
<td>3.82† (0.77)</td>
<td>3.99† (0.74)</td>
</tr>
</tbody>
</table>

Note: Standard deviations are in parentheses. †p<0.10, *p<0.05, **p<0.01, ***p<0.001

<sup>3</sup>Per pre-registration, the ratings for positive feelings and gratitude were analyzed as separate constructs given the correlation between participant responses was below 0.6 (r = 0.28).
## Study 1 Complete Results

Table 3. The results of all two-tailed t-tests comparing predicted drivers of gym visits by condition in Study 1.

<table>
<thead>
<tr>
<th>Participants visited the gym because they…</th>
<th>“…wanted to listen to an audiobook while working out at the gym”</th>
<th>“…were reminded to visit the gym whenever they listened to an audiobook”</th>
<th>“…felt grateful to the gym”</th>
<th>“…felt positively about the gym”</th>
<th>“…wanted to earn money for going to the gym”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple free audiobook condition vs. control condition</td>
<td>$t(204) = 2.550^*$</td>
<td>$p = 0.011$</td>
<td>$t(204) = 3.185^{**}$</td>
<td>$p = 0.002$</td>
<td>$t(204) = 0.213$</td>
</tr>
<tr>
<td>Free audiobook with encouragement to temptation bundle condition vs. control condition</td>
<td>$t(201) = 5.426^{***}$</td>
<td>$p &lt; 0.001$</td>
<td>$t(201) = 6.176^{***}$</td>
<td>$p &lt; 0.001$</td>
<td>$t(201) = 0.283$</td>
</tr>
<tr>
<td>Free audiobook with encouragement to temptation bundle condition vs. simple free audiobook condition</td>
<td>$t(197) = 2.823^{**}$</td>
<td>$p = 0.005$</td>
<td>$t(197) = 2.792^{**}$</td>
<td>$p = 0.006$</td>
<td>$t(197) = 0.058$</td>
</tr>
</tbody>
</table>

* $p < .05$; ** $p < .01$; *** $p < .001$
Study 2 Main Result

Table 4. Study 2 participants’ responses to how they felt the audiobooks were intended to be used during the StepUp Program.

<table>
<thead>
<tr>
<th>StepUp Program designers primarily wanted participants to use the free Audible audiobook they gave away as part of the StepUp Program for…</th>
<th>Number of participants (percent of total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Entertainment at the gym”</td>
<td>60 (80%)***</td>
</tr>
<tr>
<td>“Entertainment outside the gym”</td>
<td>11 (14.67%)</td>
</tr>
<tr>
<td>“Entertainment whenever they wanted”</td>
<td>4 (5.33%)</td>
</tr>
<tr>
<td>N of participants</td>
<td>75</td>
</tr>
</tbody>
</table>

Note: *** indicates proportion significantly greater than chance (33%) (**p<0.001)
REFERENCES


https://doi.org/10.1016/j.compedu.2014.08.019.


Patel, M. S., Benjamin, E. J., Volpp, K. G., Fox, C. S., Small, D. S., Massaro, J. M., … & Murabito,


Appendix A: Study 1 Stimuli

Screen 1 (control, simple free audiobook, and free audiobook with encouragement to temptation bundle conditions):

Today, you will be asked to participate in a survey intended for gym members.

Screen 2 (control, simple free audiobook, and free audiobook with encouragement to temptation bundle conditions):

Last year a national gym chain offered a program called StepUp to all of its members for free. StepUp was a 28-day workout rewards program designed by scientists to help people build positive health habits. During the 28-day program, StepUp participants earned points for visiting the gym, which they could trade in for Amazon cash (about $0.22 per visit).

On the next screen, you will be asked a follow-up question to ensure you understand how the StepUp program worked. If you fail to answer this question correctly, you will not be able to proceed with the survey.
Screen 3 (control, simple free audiobook, and free audiobook with encouragement to temptation bundle conditions):

What program was offered to gym members?

- StepUp, a 28-day workout rewards program
- StepUp, a 28-day healthy eating program
- WorkOut, a 28-day workout rewards program

Screen 4 (control, simple free audiobook, and free audiobook with encouragement to temptation bundle conditions):

That's correct!

StepUp participants signed up for the program online. The screenshots on the following pages show what ACTUAL StepUp participants saw when they signed up.

After reviewing these screenshots, you will be asked about how you think StepUp participants would have reacted to the program.

Please note that you will be quizzed on program content and will only be eligible for a $1.00 bonus if you answer questions correctly.
Screen 5 (control, simple free audiobook, and free audiobook with encouragement to temptation bundle conditions):

First, if gym members were interested in signing up for StepUp, members were invited to visit the following webpage:

Click “Next” after reviewing this screen, and we’ll show you what happened when a gym member selected “Sign up” or “Join now.”

*Note that you will be quizzed on program content and will only be eligible for a $1.00 bonus if you answer questions correctly.
After signing up for StepUp, members were welcomed to the program and learned how they could earn points.

Welcome!
You’ve earned 100 points for registering.

How do StepUp Points Work?

- Earn 300 points every day you work out at your gym during the Program
- Get an Amazon gift card for all of the points you earned

Here’s the conversion rate between points and Amazon cash:

7,000 points = $5 Amazon gift card

(‘Yeah, this won’t make you rich, but isn’t it nice to earn a little cash for exercising??)

What’s next?
The core of the StepUp program:

- Schedule your workouts
- Kickstart your gym habit with an activity designed by StepUp scientists
Screen 7 (control, simple free audiobook, and free audiobook with encouragement to temptation bundle conditions):

Participants were then prompted to plan the dates and times when they would visit the gym each week during the 28-day StepUp program. For example, a participant could decide to work out each Tuesday at 9 pm, Wednesday at 8 pm, and Saturday at 12 pm. They were texted reminders to exercise 30 minutes before selected workout times throughout the StepUp program.
Next, participants were asked about what activities they normally did at the gym and learned that they would receive a free audiobook from Audible.com as part of the StepUp Program.
Next, participants were taught how to “temptation bundle.” Temptation bundling was illustrated through both a cartoon and video.

If you would like to watch the “Learn How to Temptation Bundle Video” yourself, you may do so below.
Participants were then invited to customize the advice they would receive on temptation bundling to suit their entertainment preferences.
Participants received recommendations for what forms of entertainment to bundle with exercise based on their preferences. The left-hand screen shows an example of what a participant would see if they indicated a preference for audiobooks and literary fiction. Participants then were then invited to make a commitment to temptation bundling.
Screen 12 (simple free audiobook and free audiobook with encouragement to temptation bundle conditions):

Participants then saw the following screen, which provided a code that allowed them to download a free audiobook from Audible.com:
Screen 13 (control, simple free audiobook, and free audiobook with encouragement to temptation bundle conditions):

The final screen StepUp participants saw provided a summary of what they could expect to receive during the 28-day program.
Screen 14 (control, simple free audiobook, and free audiobook with encouragement to temptation bundle conditions):

Thank you for taking the time to review the StepUp Program sign-up experience.

You will now be asked a few questions on StepUp Program content. You will only be eligible for a $1.00 bonus if you answer these questions correctly.
Screen 15 (control condition):

How did the StepUp program work?

- StepUp gave you points for going to the gym, which you could trade for Amazon cash
- StepUp gave you diet and nutrition plans to help you build a healthy lifestyle
- StepUp gave you a workout buddy to help you stay on track on your fitness goals

At the beginning of the StepUp Program, what were StepUp participants asked to create?

- A weekly exercise schedule
- A nutrition plan
- A goal diary
Screen 16 (simple free audiobook and free audiobook with encouragement to temptation bundle conditions):

<table>
<thead>
<tr>
<th>How did the StepUp program work?</th>
</tr>
</thead>
<tbody>
<tr>
<td>StepUp gave you points for going to the gym, which you could trade for Amazon cash</td>
</tr>
<tr>
<td>StepUp gave you diet and nutrition plans to help you build a healthy lifestyle</td>
</tr>
<tr>
<td>StepUp gave you a workout buddy to help you stay on track on your fitness goals</td>
</tr>
</tbody>
</table>

At the beginning of the StepUp Program, what were StepUp participants asked to create?

| A weekly exercise schedule | ☐ |
| A nutrition plan | ☐ |
| A goal diary | ☐ |

What company did StepUp partner with?

| Blink | ☐ |
| Audible | ☐ |
| Hulu | ☐ |
Screen 17 (control, simple free audiobook, and free audiobook with encouragement to temptation bundle conditions):

You will now be asked to forecast how StepUp program participants reacted to the StepUp Program.

Screen 18 (control, simple free audiobook, and free audiobook with encouragement to temptation bundle conditions):

How many days a week do you think a typical StepUp participant went to the gym, on average, during the program?

0 days
1 day
2 days
3 days
4 days
5 days
6 days
7 days
### Screen 19 (control, simple free audiobook, and free audiobook with encouragement to temptation bundle conditions):

<table>
<thead>
<tr>
<th>Motive</th>
<th>Very unlikely</th>
<th>Somewhat unlikely</th>
<th>Neither unlikely nor likely</th>
<th>Somewhat likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants were reminded to visit the gym whenever they listened to an audiobook</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants felt grateful to the gym</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants wanted to earn money for going to the gym</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants felt positively about the gym</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants wanted to listen to an audiobook while working out at the gym</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Screen 20 (simple free audiobook and free audiobook with encouragement to temptation bundle conditions):

About how frequently do you exercise?

- 0 times a week
- 1-2 times a week
- 3-4 times a week
- 5+ times a week

If you were in the StepUp Program, would you have downloaded the free audiobook?

- Yes
- No

If you had downloaded the audiobook in the StepUp Program, how would you have listened to the audiobook (check all that apply)?

- For entertainment outside the gym
- For entertainment at the gym
- For entertainment whenever
Screen 21 (control condition):

About how frequently do you exercise?

- 0 times a week
- 1-2 times a week
- 3-4 times a week
- 5+ times a week
Screen 22 (control, simple free audiobook, and free audiobook with encouragement to temptation bundle conditions):

<table>
<thead>
<tr>
<th>What is your age? (Please enter numeric characters only, e.g., 21 or 65)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ]</td>
</tr>
</tbody>
</table>

| What is your gender identity? |
| Man | [ ] |
| Woman | [ ] |
| Another identity not listed | [ ] |
| Prefer not to say | [ ] |

| Please specify your ethnicity (check all that apply): |
| White | [ ] |
| Black or African American | [ ] |
| American Indian or Alaska Native | [ ] |
| Asian | [ ] |
| Native Hawaiian or Pacific Islander | [ ] |
| Other | [ ] |
| Prefer not to say | [ ] |

This space is provided if you have any additional comments or feedback for the research team.

[ ]
Appendix B: Study 2 Stimuli

Screen 1:

Today, you will be asked to participate in a survey intended for gym members.

Screen 2:

Last year a national gym chain offered a program called StepUp to all of its members for free. StepUp was a 28-day workout rewards program designed by scientists to help people build positive health habits. During the 28-day program, StepUp participants earned points for visiting the gym, which they could trade in for Amazon cash (about $0.22 per visit).

On the next screen, you will be asked a follow-up question to ensure you understand how the StepUp program worked. If you fail to answer this question correctly, you will not be able to proceed with the survey.
Screen 3:

What program was offered to gym members?

- StepUp, a 28-day workout rewards program
- StepUp, a 28-day healthy eating program
- WorkOut, a 28-day workout rewards program

Screen 4:

That's correct!

StepUp participants signed up for the program online. The screenshots on the following pages show what ACTUAL StepUp participants saw when they signed up.

After reviewing these screenshots, you will be asked about how you think StepUp participants would have reacted to the program.

Please note that you will be quizzed on program content and will only be eligible for a $1.00 bonus if you answer questions correctly.
Screen 5:

First, if gym members were interested in signing up for StepUp, members were invited to visit the following webpage:

Click “Next” after reviewing this screen, and we'll show you what happened when a gym member selected “Sign up” or “Join now.”

*Note that you will be quizzed on program content and will only be eligible for a $1.00 bonus if you the answer questions correctly.
Screen 6:

After signing up for StepUp, members were welcomed to the program and learned how they could earn points.

Welcome!
You’ve earned 100 points for registering.

How do StepUp Points Work?
- Earn 300 points every day you work out at your gym during the Program
- Get an Amazon gift card for all of the points you earned

Here’s the conversion rate between points and Amazon cash:
7,000 points = $5 Amazon gift card

(“Yeah, this won’t make you rich, but isn’t it nice to earn a little cash for exercising?”)

What’s next?
The core of the StepUp program:
- Schedule your workouts
- Kickstart your gym habit with an activity designed by StepUp scientists
Participants were then prompted to plan the dates and times when they would visit the gym each week during the 28-day StepUp program. For example, a participant could decide to work out each Tuesday at 9 pm, Wednesday at 8 pm, and Saturday at 12 pm. They were texted reminders to exercise 30 minutes before selected workout times throughout the StepUp program.
Next, participants were asked about what activities they normally did at the gym and learned that they would receive a free audiobook from Audible.com as part of the StepUp Program.
Participants then saw the following screen, which provided a code that allowed them to download a free audiobook from Audible.com.

Go Get Your Free Audible Audiobook, Courtesy of StepUp

Your personal single-use promotion code is on its way! Please check your email in 30 minutes.

Download your free Audible audiobook by clicking here. Enter your promotion code and click Redeem.
Screen 10:

The final screen StepUp participants saw provided a summary of what they could expect to receive during the 28-day program.

Congrats!
You're all set!

Your StepUp program starts tomorrow

Over the next 28 days, you'll receive:

- Text reminders 30 minutes before your scheduled workouts
- Customized StepUp texts
- Weekly emails with your workout schedule

Get pumped for 28 days of science-backed habit building!

Go to 24GO
**Screen 11:**

Thank you for taking the time to review the StepUp Program sign-up experience.

You will now be asked a few questions on StepUp Program content. You will only be eligible for a $1.00 bonus if you answer these questions correctly.

**Screen 12:**

How did the StepUp program work?

- StepUp gave you points for going to the gym, which you could trade for Amazon cash
- StepUp gave you diet and nutrition plans to help you build a healthy lifestyle
- StepUp gave you a workout buddy to help you stay on track on your fitness goals

At the beginning of the StepUp Program, what were StepUp participants asked to create?

- A weekly exercise schedule
- A nutrition plan
- A goal diary

What company did StepUp partner with?

- Blink
- Audible
- Hulu
What do you think the StepUp Program designers hoped participants would do with the free Audible audiobooks they gave away as part of the StepUp Program?
Screen 14:

How do you think StepUp Program designers primarily wanted participants to use the free Audible audiobook they gave away as part of the StepUp Program?

- For entertainment outside the gym
- For entertainment whenever they wanted
- For entertainment at the gym

Screen 15:

About how frequently do you exercise?

- 0 times a week
- 1-2 times a week
- 3-4 times a week
- 5+ times a week
Screen 16:

What is your age? (Please enter numeric characters only, e.g., 21 or 65)

What is your gender identity?
- Man
- Woman
- Another identity not listed
- Prefer not to say

Please specify your ethnicity (check all that apply):
- White
- Black or African American
- American Indian or Alaska Native
- Asian
- Native Hawaiian or Pacific Islander
- Other
- Prefer not to say

This space is provided if you have any additional comments or feedback for the research team.
Appendix C. Study 2 Coder Instructions.

General Instructions: We’re interested in studying people’s expectations for how an audiobook offered as part of a workout rewards program should be used.

We would like you to code survey participants’ answers to the free response question, “What do you think the StepUp Program designers hoped participants would do with the free Audible audiobooks they gave away as part of the StepUp Program?” Please rate each response as a 0 or a 1 based on the following:

“1” Answers
- Indicate audiobook should be used **when a participant is exercising**
  - Sample “1” responses:
    - “For use at the gym”
    - “For use during a workout”
    - “For use during exercise”
    - “Listen while exercising”
    - “Enjoy when they work out”
    - “Learn about healthy eating as they exercise”

“0” Answers
- Indicate audiobook should be used **outside the gym and/or whenever the person wants**
  - Sample “0” responses:
    - “To download for personal enjoyment”
    - “To use whenever they feel like listening to an audiobook”
    - “To entertain themselves when they’re bored at home”
    - “To tell their friends to download Audible”
    - “To benefit their promotional partnership with Audible”
    - “To teach them about healthy eating”
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