The Easy Addendum Effect: When Doing More Seems Less Effortful

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Abstract

Although people often value the challenge and mastery of performing an activity, their satisfaction may suffer when the tasks comprising the activity are perceived as difficult. Thus, it is important to understand the factors that influence subjective judgments of difficulty. In this research, we introduce an easily actionable and effective tactic to reduce perceptions of overall difficulty of an activity: we find that concluding a sequence of difficult tasks with a few easy tasks can decrease perceived difficulty of the aggregate activity. While appending extra tasks to a constant sequence should increase the objective amount of effort necessary to complete all the tasks, we find that more tasks can paradoxically be perceived as less effortful. We coin this phenomenon the *easy addendum effect* and demonstrate that it is less likely to occur when an overall activity is conceptualized as consisting of a single category rather than two distinct categories—that is, a set of difficult tasks followed by a set of easy tasks. We further show downstream consequences of this effect—through lower perceived difficulty, the easy addendum effect can lead to greater satisfaction, persistence, and more tasks performed overall.

Keywords: difficulty, effort, categorization, satisfaction, persistence

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Even simple, everyday activities often require concentration and attention to detail. A customer service representative may need to respond to multiple customer queries. A librarian may have to arrange books alphabetically on a shelf. A warehouse operator may need to repeatedly pack and stack heavy boxes. Each of these examples involves mental or physical effort; even when the tasks comprising an activity are not overly complex, people may still find them difficult or effortful (Campbell, 1988).

The present research examines behaviors and difficulty judgments of participants in controlled lab experiments where they perform routine tasks that resemble the ones mentioned above. Importantly, many of us engage in such tasks, at least during a portion of our day. Indeed, nearly half of 1,072 working Americans surveyed across all organizational levels indicated that they spend much of their day performing menial tasks (Clifford, 2016), many of which are repetitive but do not rely on complex decision making or multi-stage problem solving.

Yet, many mundane tasks nevertheless require concentration, precision, or strength. As such, the way in which they are perceived will impact task persistence and performance. Although people may sometimes prefer difficult tasks because they provide a challenge or opportunity for mastery, (e.g., Foulk & Lanaj, 2022; Mazzola & Disselhorst, 2019), in general, individuals are "more likely to engage in a given behavior the less effort it requires" (Song & Schwarz, 2008, p. 986). Effort and difficulty perceptions have important downstream effects on motivation, performance, and satisfaction (e.g., Clark & Saxberg, 2019; Ewen, 1973; Huber, 1985; Mento et al., 1987; Steele-Johnson et al., 2000; Weingart, 1992); people's productivity often suffers when tasks are perceived as difficult. Thus, understanding the factors that influence these perceptions is of paramount importance.

We identify a novel tactic that reduces effort perceptions and makes completed activities seem easier. We propose that, all else equal, concluding a sequence of relatively difficult tasks with a few easy tasks will reduce effort perceptions of the *overall* activity. We coin this phenomenon the *easy addendum effect* and delineate why and when it emerges. We also document downstream consequences: reduced difficulty perceptions can result in enhanced satisfaction, persistence, and more tasks performed overall.

Theoretical Framework

In general, one would predict that adding more tasks to an existing set of tasks will make the overall activity more effortful, not less. This prediction is consistent with the view that an increase in duration—as measured by the total time spent in an activity—will require greater effort (Weingart, 1992). However, we propose that the objective difficulty of the tasks in a sequence (relative to one another) and the order in which they are performed will also influence effort perceptions—when the tasks at the end are easier, they may lower perceived difficulty of the overall activity.

Our prediction is consistent with previous findings that people often exhibit a bias wherein they erroneously average rather than add multiple inputs to form an overall judgment (Brough & Chernev, 2012; Chernev & Gal, 2010). For example, consumers estimate the calorie content of a vice/virtue combination (e.g., hamburger and salad) to be lower than that of the unhealthy food alone (e.g., hamburger) (Chernev & Gal, 2010). To the extent that effort intensity—measured by the rate of effort (i.e., number of effort-related tasks performed per unit of time)—and not just effort duration affects perceptions of difficulty (Bryan & Locke, 1967; Garland, 1982; Locke & Latham, 1990), people may sometimes be inclined to average across their various tasks instead of relying on a strictly additive process.

Rather than weighting each task equally when judging overall difficulty, people may differentially weight certain tasks. Research on serial position effects (Unkelbach & Memmert, 2014) suggests two possibilities. First, individuals often make tentative judgments about preference based on initial inputs (Anderson, 1965), and this "leader-driven" primacy effect (Carlson et al., 2006, p. 513) is often resistant to subsequent information (Bond et al., 2007; Russo et al., 2006). Based on this logic, earlier tasks might affect overall effort judgments more than later tasks. In contrast, recency effects (Farr, 1973; Haugtvedt & Wegener, 1994; Krosnick et al., 1990; Peters & Bijmolt, 1997; Steiner & Rain, 1989; Wilson & Insko, 1968) have been demonstrated in which final items or later events in a sequence are recalled better or weighted more in evaluations, largely owing to the limited capacity of short-term memory (Baddeley et al., 1969; Glanzer & Cunitz, 1966). However, serial position effects have been studied only in judgments of individual items in a sequence (e.g., the last contestant in a talent show; Farr, 1973; Page & Page, 2010; Steiner & Rain, 1989), not for judgments that relate to the entire set (e.g., overall evaluation of the entire contestant pool). Thus, it is unclear whether the ordering of tasks will influence aggregate perceptions of a completed activity.

A separate stream of research also relates to our proposed easy addendum effect. This research has documented a *peak-end rule* in which individuals retrospectively evaluate an experience by relying heavily on their feelings during both its most affectively intense portion and its ending stage (Do et al., 2008; Fredrickson & Kahneman, 1993; Thomas et al., 2018). The peak-end rule has been primarily observed in judgments of visceral sensations of pain and pleasure, such as the perceived aversiveness of a noise profile or a painful medical procedure (Ariely & Zauberman, 2000; Redelmeier & Kahneman, 1996). Compared to those experiences, the present context differs in three important ways. Specifically, we consider: (1) everyday

activities that do not evoke intense pain or pleasure, (2) experiences that require active involvement (i.e., individuals actually perform tasks) rather than just passive participation (e.g., experiencing a medical procedure), and (3) common and familiar judgments (e.g., difficulty perceptions) for which people might be inclined to rely on benchmarks or inputs (e.g., total time spent exerting effort). Given these differences, it is unclear based on prior peak-end research whether easy addendums will affect overall difficulty perceptions of the entire activity.

In addition to proposing an easy addendum effect in judgments of difficulty, we argue that the effect will be less prominent when individuals do not mentally classify the tasks into two separate categories (i.e., difficult tasks and easy tasks). Research on categorical reasoning (Brough & Chernev, 2012) suggests that when stimuli belong to the same category, participants correctly add inputs rather than erroneously averaging them (e.g., consumers determine the combined value of two *expensive* products by adding the estimated value of each product). However, they sometimes average when inputs are from different categories (e.g., consumers may determine the combined value of one *expensive* product and one *inexpensive* product by averaging the value of the two products). Likewise, when confronted with only difficult tasks, individuals may be more likely to add inputs to judge the overall difficulty of the completed activity. In contrast, when easier tasks are appended, they may average the effort required across each category, thereby lowering overall difficulty perceptions. Based on this reasoning, we predict that *category distinctiveness* will moderate the easy addendum effect: our proposed effect is less likely to emerge when people fail to recognize and attend to differences between harder and easier tasks—thereby categorizing them together rather than separately. Five experiments (plus three additional experiments reported in the Online Supplemental Materials) using different

tasks demonstrate the easy addendum effect, provide evidence for the moderating role of category distinctiveness, and show downstream behavioral consequences (see Figure 1).

Transparency and Openness

We adhered to the *Journal of Applied Psychology* methodological checklist. All data, analysis syntax, and study materials are available at https://osf.io/8mevf/. If not indicated otherwise, analyses were conducted with IBM SPSS Statistics (Version 27). All studies were conducted under a research protocol that was determined as exempt by the Virginia Tech Institutional Review Board (IRB # 18-1010, Project Title: Task Evaluation). Although the study designs and analyses were not preregistered, sample sizes were determined in advance based on power analyses and logistical and financial constraints. Furthermore, we have reported all data exclusions in each study (if applicable), as well as all manipulations and measures related to our hypothesis testing.

Study 1

In Study 1, we investigate if appending the same set of difficult tasks with a set of easier tasks lowers the perceived difficulty of an activity, in aggregate. We focus on tasks that involve *physical* effort. Participants were directed to apply a specific amount of pressure to a hand grip, as measured by a built-in dynamometer (a gauge that measures the amount of applied pressure).

Method

In total, 255 undergraduates (30.6% Female, M_{age} = 20.43) from a U.S. university completed this 2 (addendum: no vs. easy) x 2 (gender: male vs. female) between-participants study.[1] Details about the experimental materials for all the studies are included in Supplemental Material A. We informed participants that the activity they would be performing was to apply

[1] Based on a medium effect size of d = 0.35 with 80% power, we needed approximately 130 participants per cell to obtain the easy addendum main effect. We targeted to recruit 260 participants.

pressure to the hand grip at a specified strength level for 10 seconds. We asked male and female participants to apply different pressure levels based on a pre-test (see Supplemental Material B). In the no addendum condition, men were required to apply pressure at 120, 125, and 130 pounds, and women at 75, 80, and 85 pounds. These difficulty levels were randomly ordered and repeated three times each (so both men and women completed nine difficult tasks in total). In the easy addendum condition, three easy levels were appended to the activity (85, 90, and 95 pounds for men; 45, 50, and 55 pounds for women; randomly ordered), so these participants completed 12 rounds. All participants then indicated how much overall effort the activity required (1 = a little, 7 = a lot) and how difficult it was (1 = very easy, 7 = very difficult), which we averaged (r = .64, $p < .001$) to measure activity difficulty perceptions. In this study and all other studies, we did not give a time limit to participants. They could complete the tasks using as much time as they needed so they were not faced with any time pressure.

Results

Table 1 presents descriptive statistics and correlations for variables in Study 1. A 2 x 2 ANOVA on perceived difficulty elicited two significant main effects. The interaction, however, was not significant; $F(1, 251) = 0.21$, $p = .65$, $\eta_p^2 = .001$. The main effect of gender ($F(1, 251) = 4.08$, $p = .044$, $\eta_p^2 = .016$) suggests that women ($M_{female} = 4.29$, $SD = 1.28$) judged the activity to be more difficult than men ($M_{male} = 3.96$, $SD = 1.34$, $d = 0.25$). Importantly, participants in the easy (vs. no) addendum condition judged the activity to be less difficult ($M_{easy\text{-}addendum} = 3.89$, $SD = 1.30$ vs. $M_{no\text{-}addendum} = 4.27$, $SD = 1.34$, $d = 0.29$, $F(1, 251) = 5.80$, $p = .017$, $\eta_p^2 = .023$). This effect was observed among both male and female participants (see Appendix A).

Discussion

Study 1 provides evidence that for an activity requiring physical effort, appending a few easy tasks to difficult physical tasks lowers overall difficulty perceptions. In Study S1 (Supplemental Material C), we replicate the easy addendum effect for a common administrative activity that requires concentration and attention to detail (i.e., data entry).

Study 2

In Study 2, we demonstrate the easy addendum effect in another context and show downstream consequences on satisfaction and persistence. Notably, we also show that the effect generalizes to contexts involving *mental* effort.

Method

In total, 201 undergraduates (56.7% Female, M_{age} = 20.43) from a U.S. university completed this single factor between-participants experiment online.[2] We asked participants to sort book titles in alphabetical order, which is an everyday clerical activity representative of those that librarians, curators, and administrative professionals might perform. Participants needed to complete several rounds of sorting. In the no addendum condition, participants completed 10 rounds of difficult sorting tasks. In each round, we gave participants 10 book titles starting with the same letter in a random order (e.g., *Another Day in Paradise*, *Across Many Mountains*, *Absolute Friends,* etc.). In the easy addendum condition, we added three additional easy rounds after they completed the 10 difficult ones. In the easy rounds, we gave participants 5 book titles starting with different letters in a random order (e.g., *Catch Me if You Can*, *After the Snow*, *Bad Luck and Trouble*, etc.) such that the sorting was much easier.[3]

[2] Based on a medium effect size of d = 0.35 with 80% power, we needed approximately 130 participant per cell. We set a target sample size of 260. A smaller-than-expected number of participants completed this study, due to the impact of COVID-19.

[3] We collected the titles from bookbrowse.com.

After the sorting activity, participants indicated how much effort the activity required in total (1 = a little, 9 = a lot) and how difficult it was (1 = very easy, 9 = very difficult), which we averaged ($r = .74$, $p < .001$) to create our key dependent variable. We then measured participants' satisfaction ("How well do you feel about this task?" 1 = very bad, 9 = very well) and persistence (asking "To what extent would you like to take a break first?" before another similar activity; 1= not at all, 9 = very much; we reverse coded this item in our analysis).

Results

Table 2 presents descriptive statistics and correlations for variables in Study 2. A one-way ANOVA on perceived difficulty was significant, $F(1, 199) = 6.65$, $p = .011$, $\eta_p^2 = .032$. Participants in the easy (vs. no) addendum condition perceived the activity as less difficult ($M_{\text{easy-addendum}} = 5.35$, $SD = 2.29$ vs. $M_{\text{no-addendum}} = 6.13$, $SD = 1.95$, $d = 0.36$). Participants in the easy (vs. no) addendum condition were more persistent in continuing (i.e., less likely to take a break before the next activity) ($M_{\text{easy-addendum}} = 5.18$, $SD = 3.15$ vs. $M_{\text{no-addendum}} = 4.09$, $SD = 2.98$, $d = 0.35$; $F(1, 199) = 6.25$, $p = .013$, $\eta_p^2 = .030$). While participants' satisfaction exhibited a similar pattern, the difference between conditions was not statistically significant ($M_{\text{easy-addendum}} = 5.82$, $SD = 2.67$ vs. $M_{\text{no-addendum}} = 5.22$, $SD = 2.38$, $d = 0.24$; $F(1, 199) = 2.81$, $p = .095$, $\eta_p^2 = .014$). It might be that the sorting activity was inherently unengaging for undergraduate students; hence, the lower difficulty perceptions may not have been enough to generate a significant difference in satisfaction with the activity.

A path analysis using Mplus 8.4 (Muthén & Muthén, 2017) to test for mediation revealed significant indirect effects of easy addendum on both satisfaction (unstandardized indirect effect = 0.50, $SE = 0.20$, $p = .011$, 95% CI [0.140, 0.909], bootstrap: 5,000 times) and persistence

(unstandardized indirect effect = 0.63, *SE* = 0.26, *p* = .015, 95% CI [0.166, 1.194], bootstrap: 5,000 times) via perceived difficulty (see Table 3).

Discussion

Study 2 demonstrates the easy addendum effect using a sorting activity like those regularly performed by administrative professionals. This indicates that the easy addendum effect occurs in a relatively common context involving mental effort. We also show that lower difficulty perceptions lead to downstream consequences: enhanced satisfaction and greater persistence.

Study 3

Study 3 uses a real-choice context that resembles a customer service interaction. We explore whether an easy addendum affects participants' decision to undertake a similar, subsequent activity for additional compensation (i.e., academic credit), which serves as an incentive-compatible measure of actual persistence.

Method

In total, 273 undergraduates (34.8% Female, M_{age} = 20.43) from a U.S. university completed this single factor between-participants study (no addendum vs. easy addendum).[4] As per existing norms, participants were offered 0.25 credits for completing a session lasting approximately 15 minutes. They were also told about an option to earn an additional 0.25 credits in exchange for completing a similar, subsequent activity. Participants eligible for this study needed at least 0.50 credits to satisfy their course requirement. This was done to ensure that the decision of whether or not to complete the additional survey was meaningful to them.

[4] Based on a medium effect size of *d* = 0.35 with 80% power, we needed approximately 130 participants per cell. We set a minimum target sample size of 260.

We informed participants that they were helping a retailer, LQA (a fictitious name), respond to email queries from LQA's real customers. The responses were required to be based on LQA's quick reference guide (a list of frequently asked questions with answers; see Supplemental Material A) and follow a standard email template. In the no addendum condition, participants responded to four email queries, each of which included two or more questions and/or a complicated situation. In the easy addendum condition, two additional easier email queries with only one question were appended.

After responding to the queries, participants completed our two questions measuring perceived difficulty on 7-point scales, which we averaged (r = .66, $p < .001$). Before exiting the study, we informed participants that we had additional emails from LQA that required responses and that they could earn another 0.25 credits by responding to similar emails. We asked whether they would like to write the additional emails. If they responded affirmatively, we presented four additional emails, and recorded completion as our measure of participants' persistence.

Results

Table 4 presents descriptive statistics and correlations for variables in Study 3. A one-way ANOVA on perceived difficulty was significant, $F(1, 271) = 22.84$, $p < .001$, $\eta_p^2 = .078$. Participants in the easy (vs. no) addendum condition perceived the activity as less difficult ($M_{\text{easy-addendum}} = 3.09$, $SD = 1.25$ vs. $M_{\text{no-addendum}} = 3.90$, $SD = 1.55$, $d = 0.58$). Also, a logistic regression with actual completion of the additional task as the dependent variable and the condition as the predictor elicited a significant effect ($b = 0.61$, $SE = 0.26$, Wald $\chi^2(1) = 5.33$, $p = .021$, $OR = 1.83$, 95% CI [1.10, 3.06]). Participants in the easy (vs. no) addendum condition had 83% higher odds to complete the four additional emails (73.9% vs. 60.7%). Last, we conducted a mediation analysis with logistic regression using Process (v 3.5) Model 4 (Hayes, 2018). The indirect effect

of easy addendum on persistence through perceived difficulty was significant (unstandardized indirect effect = 0.57, *SE* = 0.17, 95% CI [0.276, 0.945], bootstrap: 5,000 times; see Table 5). We also conducted additional analyses (Appendix B) on the number of words participants wrote.

Discussion

In Study 3, we replicated the easy addendum effect using an activity that resembles tasks performed by many customer service representatives (i.e., responding to customer inquiries). We also demonstrated downstream consequences on participants' persistence through their actual completion of additional tasks in an incentive-compatible paradigm. Given that people often have control over the order in which they respond to emails, saving relatively easier emails for later—after responding to a series of difficult ones—may be beneficial.

Study 4

Next, we identify important boundary conditions of the easy addendum effect. In Study 4, we manipulate the position of the additional easy tasks within the sequence of an activity.

Method

In total, 489 Amazon Mechanical Turk workers (57.9% Female, M_{age} = 40.28) completed this study.[5] Participants learned that we were interested in understanding how accurately people judge spatial distances. We presented a slider, anchored by 0 and 100 at the two ends, and told participants that their assignment was to accurately find the spatial location corresponding to specific numbers on the unmarked line. Participants first completed a trial round where they located the position corresponding to the number 50 on the line.

[5] Based on a medium effect size of d = 0.35 with 80% power, we needed approximately 130 participants per cell. We targeted to recruit 500 participants for this four-condition between-participant study (no addendum vs. easy addendum vs. easy start vs. easy in the middle).

Participants were assigned to one of four conditions. In the no addendum condition, participants located the position of 10 numbers (e.g., 5, 15) sequentially on the slider. They could only proceed to the next slider after locating the spatial position accurately. Given the difficulty associated with accurately locating spatial positions on an unmarked slider, we created an acceptance interval of +/-2 for validation. For example, if participants were asked to locate 5 on the slider, responses in the range between 3 and 7 were accepted. Participants were not made aware of this acceptance interval. In the easy addendum condition, we appended three easier sliders at the end; the easier sliders included eight other numerical anchors between 0 and 100 (e.g., 11, 22, 33…), making it easier to locate spatial positions and to be aware that these were easier to solve. In the easy-start condition, we presented the three easier sliders first before the 10 difficult ones while in the easy-in-the-middle condition, we presented the 3 easier sliders after participants completed the first 5 difficult sliders, followed by another 5 difficult ones. After the slider task, participants responded to our two questions measuring their perceived difficulty, which we averaged ($r = .77$, $p < .001$) to serve as our dependent variable.

Results

Table 6 presents descriptive statistics and correlations for variables in Study 4. We expected our effect to only occur when additional easy tasks are placed at the end, as opposed to the beginning or middle of a series of more difficult tasks, or when no additional easy tasks are provided. Because our key prediction is that difficulty judgments will be lower in the easy addendum condition as compared to the other three conditions, we first conducted an analysis in which the three other conditions were pooled. As expected, participants in the easy addendum condition perceived the overall activity to be less difficult relative to the pooled condition ($F(1, 485) = 6.94$, $p = .009$, $\eta_p^2 = .014$).

Individual contrasts provided additional support for the easy addendum effect (see Table 7). Participants in the easy addendum condition ($M_{\text{easy-addendum}}$ = 4.15, *SD* = 1.70) perceived the activity to be less difficult than those in the no addendum condition ($M_{\text{no-addendum}}$ = 4.64, *SD* = 1.79, *d* = 0.28, *F*(1, 485) = 5.19, *p* = .023, η_p^2 = .011), replicating the easy addendum effect. Participants in the easy addendum condition also perceived the activity to be less difficult than those in the easy start ($M_{\text{easy-start}}$ = 4.56, *SD* = 1.51, *d* = 0.26, *F*(1, 485) = 3.75, *p* = .053, η_p^2 = .008) and easy in the middle conditions ($M_{\text{easy-in-the-middle}}$ = 4.62, *SD* = 1.69, *d* = 0.28, *F*(1, 485) = 4.93, *p* = .027, η_p^2 = .010). The no addendum condition did not differ on difficulty perceptions from the easy start or easy in the middle conditions (*F*s < 0.14, *p*s > .71, η_p^2s < .001).

Discussion

This study shows that only placing the additional easier tasks at the *end* of the focal activity, and not at the beginning or the middle, lowers participants' difficulty perceptions.

Study 5

In Study 5, we show that the easy addendum effect is attenuated when category distinctiveness is low. We expect our effect to be reduced if people are less likely to perceive the appended tasks as belonging to a separate category.

Method

In total, 291 undergraduate students (41.6% Female, M_{age} = 20.54) completed this three-condition between-participants study (no addendum vs. easy addendum vs. easy addendum with low category distinctiveness).[6] We kept the same no addendum and easy addendum conditions as in Study 4. While all the easy addendum conditions in our previous studies used easier

[6] Based on pilot testing, we targeted a sample size of 300. Considering the limited lab availability at the time of conducting this study, we recruited participants from two large U.S. universities. Our findings were similar for each of the universities. Detailed comparisons of the two samples are provided in the additional analyses in Appendix C.

addendums that obviously belonged to a separate albeit easier category (e.g., required lower pressure in Study 1), in this study we also included a second easy addendum condition, in which we made it difficult for participants to distinguish that the easier tasks belonged to a different category. Thus, category distinctiveness was low.

In this easy addendum condition with low category distinctiveness, we made the three additional tasks easier by increasing the acceptance interval for validation from +/-2 for the focal task to +/-5. For example, when locating 45, selecting any position in the 40-50 (as opposed to 43-47) range would suffice. Therefore, while these additional slider tasks appeared to be identical to the other difficult sliders, they were actually easier to solve. However, we did not inform participants of this change, so they were not aware that these scales were easier to complete. After the slider task, participants responded to two questions measuring their perceived difficulty, which we averaged (r = .67, $p < .001$) to serve as our dependent variable. As a measure of category distinctiveness, participants then indicated if there were two different types of slider tasks (1 = strongly disagree, 7 = strongly agree).

Results

Table 8 presents descriptive statistics and correlations for variables in Study 5. A one-way ANOVA revealed that participants in the typical easy addendum (high category distinctiveness) condition were more likely to agree that there were two types of sliders ($M_{\text{easy-addendum}} = 5.49$, $SD = 1.77$) relative to both the easy addendum with low category distinctiveness condition ($M_{\text{easy\_with\_low-category-distinctiveness}} = 3.66$, $SD = 2.00$, $d = 0.97$, $F(1, 288) = 47.78$, $p < .001$, $\eta_p^2 = .14$) and the no addendum condition ($M_{\text{no-addendum}} = 3.64$, $SD = 1.76$, $d = 1.05$, $F(1, 288) = 48.86$, $p < .001$, $\eta_p^2 = .15$). However, no difference emerged between the easy addendum with low category distinctiveness condition and the no addendum condition, $d = 0.01$, $F(1, 288) =$

0.01, $p = .94$, $\eta_p^2 < .001$. The overall main effect of condition was significant, $F(2, 288) = 32.22$, $p < .001$, $\eta_p^2 = .18$. This confirmed that our manipulation was successful.

A one-way ANOVA on perceived difficulty yielded a significant result, $F(2, 288) = 4.11$, $p = .017$, $\eta_p^2 = .028$. Participants in the easy addendum condition ($M_{\text{easy-addendum}} = 3.81$, $SD = 1.61$) perceived the activity to be less difficult than either those in the no addendum condition ($M_{\text{no-addendum}} = 4.40$, $SD = 1.55$, $d = 0.37$, $F(1, 288) = 6.86$, $p = .009$, $\eta_p^2 = .023$) or those in the easy addendum with low category distinctiveness condition ($M_{\text{low-category-distinctiveness}} = 4.33$, $SD = 1.53$, $d = 0.33$, $F(1, 288) = 5.38$, $p = .021$, $\eta_p^2 = .018$). The no addendum and the easy addendum with low category distinctiveness conditions were not different, $d = 0.04$, $F(1, 288) = 0.09$, $p = .77$, $\eta_p^2 < .001$. Additional analyses are included in Appendix C.

Discussion

Study 5 demonstrates that the easy addendum effect is attenuated when people do not perceive the easy addendum as a different category comprising of easier tasks. In another study (Supplemental Material D: Study S2), we lowered category distinctiveness in the easy addendum condition in another way, by reducing the number of appended easier tasks (when easy addendums have fewer tasks, one may not code them as a different category). Together, the two studies suggest that the easy addendum effect is attenuated when category distinctiveness is low. In yet another additional study (Supplemental Material E: Study S3), we also ruled out that additional easier tasks might increase the perceived variety of the activity.

General Discussion

Across eight experiments (including three in the Online Supplemental Materials), we document a novel and simple tactic to reduce perceptions of overall difficulty for an activity: adding a few easy tasks at the end of a sequence of several difficult tasks. This easy addendum

effect is more likely to occur when the additional easier tasks allow people to categorize the activity into two different groups (e.g., difficult and easy tasks), presumably enabling a category-level averaging (vs. adding) process that lowers overall difficulty perceptions. Lowered difficulty perceptions can enhance satisfaction, influence real choices, and increase persistence.

Theoretical Contributions

Prior research has documented that when making judgments, individuals may use an additive process *or* an averaging process (Brough & Chernev, 2012; Chernev & Gal, 2010; Sivanathan & Kakkar, 2017; Weaver et al., 2016), depending on the specific decision context and task (e.g., calorie estimation, impression formation). We contribute to this literature by demonstrating that judgments of the overall difficulty of an activity are consistent with an averaging (rather than an additive) process.

Our research also offers new insights in motivation and human performance. We show that the structure of an activity, in particular the variations of difficulty and sequence, can impact perceived effort and downstream behavioral consequences (e.g., satisfaction and persistence). Previous research has shown that "goal difficulty could be defined as how much time, thought, effort and resources were required to attain the goal" (Locke & Latham, 1990, p. 243). However, we find that adding additional easier tasks to a constant sequence of main tasks could decrease overall difficulty perceptions even though the additional tasks increase the total time people spent in aggregate. We further show that the easy addendum can influence persistence in a similar subsequent activity. Most theories on goal persistence focus on two types of variables: value (i.e., desirability) and expectancy (i.e., feasibility) (Brandstätter & Bernecker, 2022). We demonstrate that changing the structure of an activity by adding additional easier tasks at the end

can reduce the retrospective judgment of difficulty and thereby increase persistence in a similar subsequent activity.

In addition, one could have reasonably expected difficulty perceptions to follow a different pattern, with more effortful tasks leaving a stronger memory trace. We find that for everyday activities that require concentration and precision, people are in fact disproportionately affected by tasks at the end of an activity. Prior demonstrations of the peak-end rule have involved visceral or sensory judgments, such as responses to pain, cold pressure, aversive sounds, and (pleasant/unpleasant) smells (Chajut et al., 2014; Redelmeier & Kahneman, 1996; Redelmeier et al., 2003; Scheibehenne & Coppin, 2020). We contribute by showing an easy addendum effect on retrospective evaluations of a more volitional measure such as perceived effort and difficulty. We also show important downstream behavioral consequences on satisfaction, persistence, and amount of exerted effort.

Finally, we identify category distinctiveness as an important moderator. Past research has identified contexts where ending effects do not emerge (Tully & Meyvis, 2016), such as evaluations of vacations or meals (Kemp et al., 2008; Rode et al., 2007; Tully & Meyvis, 2016); our findings suggest that the inability to create and distinguish categories representing an experience may underlie the null effects. Fundamentally, this research extends our cumulative understanding of when and why ending effects occur (Tully & Meyvis, 2016) and suggests that the psychological process of categorization may provide insight into boundary conditions of the peak-end rule.

Practical Implications

While we acknowledge that our findings are limited to a controlled laboratory environment and should be evaluated further in real-life settings, they may have potentially

relevant implications for human resource managers who are responsible for task design, well-being, and performance management. People might find some tasks difficult and effortful to complete, particularly those requiring concentration and attention to detail. Sometimes, it might not be possible to eliminate or change those tasks. Instead, the entire set of existing tasks could be kept constant while simply restructuring activities so that relatively easy tasks are performed at the end when feasible. As demonstrated in Study 4, even when the task is identical, an easy addendum leads to lower difficulty perceptions than either an easy start or easy in the middle task ordering.

These findings could be valuable for individuals performing repeated tasks, as they may be able to structure their own tasks strategically (e.g., restructuring the difficult and easy components of a short-duration activity) so as to improve their performance, satisfaction, and persistence in certain tasks, particularly those requiring concentration and attention to detail in a short time span. While complete restructuring of tasks may not always be feasible, most people have a few easy tasks that need to be done and have some leeway in ordering them. Appending easier tasks at the end can have beneficial effects.

Limitations and Future Research

We provide evidence for this phenomenon across different studies involving varied experimental designs, dependent variables, and types of mentally and physically taxing activities. Admittedly, the effect size we observed across our studies is relatively small (around $d = 0.30$). We note, however, that it is not trivial to increase satisfaction and persistence. Future research is warranted to explore interventions that might produce even larger effect sizes.

Across studies, we used different activities (e.g., applying pressure to a hand grip, sorting, typing, writing emails, and identifying locations on a slider scale). While our results are

robust and involve behaviorally relevant, incentive-compatible tasks, we have only examined certain types of activities and there is a much larger spectrum of activities that people perform. We mainly focused on everyday assignments requiring concentration and precision, which are important for many different contexts. Nevertheless, future research should explore whether our findings generalize to other types of tasks (e.g., creative or complex assignments involving a greater variety of tasks).

We also only consider tasks of limited duration. For logistical reasons in part due to the COVID-19 pandemic, our tasks took a relatively short duration of time to complete. Although tasks often consist of short activities much like the ones we examined, we do not know whether the easy addendum effect will occur for complex and longer tasks. Future research could study how people evaluate a day/week/month of exerted effort and assess how those evaluations influence important long-term metrics (e.g., engagement, burnout, turnover, etc.).

We demonstrate that an explicit hint of easiness as well as the number of easier tasks can impact category distinctiveness and thus the easy addendum effect. Future research can delve deeper into the formation of categorical judgments in the workplace and provide additional insights for managers who seek to apply the easy addendum effect.

Our contexts provide support for recency effects perhaps in part because we rely on immediate retrospective evaluations. Measuring reactions this way is appropriate as immediate response to a just-completed activity directly influences satisfaction and subsequent performance in other activities. In fact, Studies 2 and 3 show that our effect increases persistence on similar activities. However, future research could investigate whether the easy addendum effect persists when an activity is evaluated at a later point in time.

Finally, at the outset, we noted the general tendency of people to prefer easier over more difficult activities; this appears to be the case for many everyday activities requiring concentration and precision. However, people sometimes actively seek out difficult and challenging activities to pursue (e.g., Foulk & Lanaj, 2022). While some stressors challenge people, others hinder them (Mazzola & Disselhorst, 2019). Future research may identify situations where easy addendums lead to negative (vs. positive) outcomes as people may not be challenged by such assignments.

Conclusion

This research extends our understanding of motivation and human performance. Across multiple studies, we document the easy addendum effect, that is, that concluding a sequence of relatively difficult tasks with a few easy ones will reduce overall effort perceptions of an activity. We also identify the necessary conditions for the easy addendum effect to emerge: the additional easier tasks should allow people to categorize the activity into two different groups (e.g., difficult and easy tasks), presumably enabling a category-level averaging process that lowers overall difficulty perceptions. We further find that lowered difficulty perceptions can enhance satisfaction, influence real choices, and increase task persistence. We hope future research will test whether the easy addendum effect emerges in other types of tasks, including those involving longer time spans, and in actual workplace settings.

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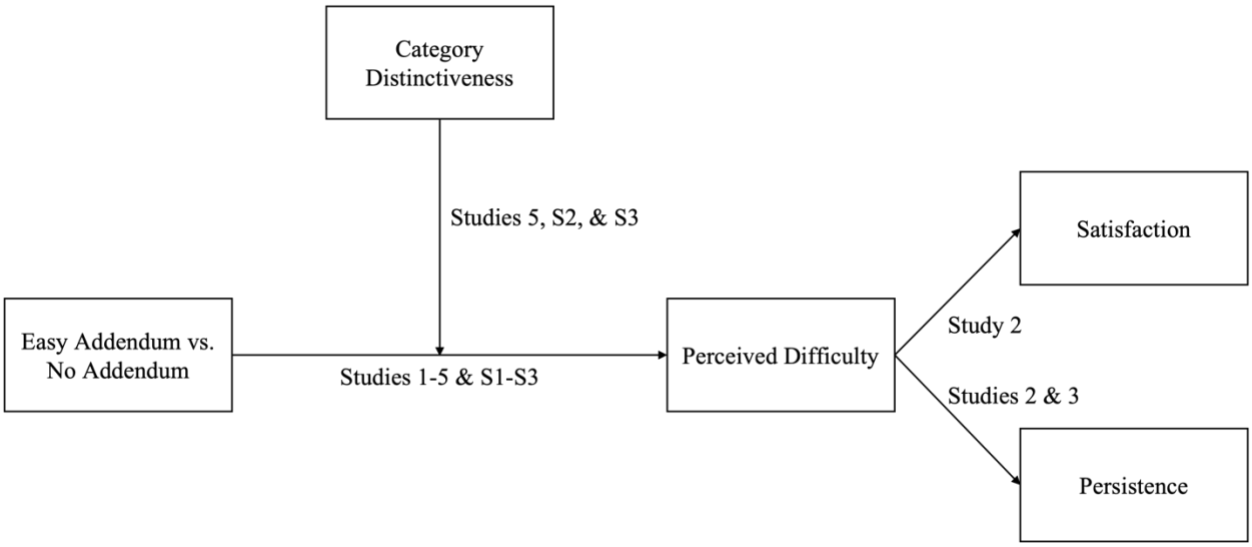
Figure 1

Conceptual Model



Note. Studies S1-S3 refer to the three additional studies reported in the Online Supplemental Materials.

Table 1

Means, Standard Deviations, and Correlations Among Study 1 Variables

Variable	*M*	*SD*	1	2	3	4
1. Age	20.43	0.83	--			
2. Gender	0.31	0.46	-.06	--		
3. Condition	0.55	0.50	.05	.05	--	
4. Difficulty	4.06	1.33	-.07	.12	-.15*	--

Note. $N = 255$. Values on the diagonal represent scale reliability. Gender is coded 0 = male, 1 = female. Condition is coded 0 = no addendum, 1 = easy addendum.
* $p < .05$.

Table 2

Means, Standard Deviations, and Correlations Among Study 2 Variables

Variable	*M*	*SD*	1	2	3	4	5	6
1. Age	20.43	1.03	--					
2. Gender	0.57	0.50	-.21**	--				
3. Condition	0.53	0.50	-.00	-.06	--			
4. Difficulty	5.72	2.16	-.10	.10	-.18*	--		
5. Satisfaction	5.54	2.55	-.04	.11	.12	-.55**	--	
6. Persistence	4.67	3.11	.16*	-.05	.18*	-.58**	.37**	--

Note. $N = 201$. Values on the diagonal represent scale reliability. Gender is coded 0 = male, 1 = female. Condition is coded 0 = no addendum, 1 = easy addendum.
* $p < .05$. ** $p < .01$.

Table 3

Results of Mediation Model in Study 2

	Mediator: Difficulty		Outcome: Satisfaction		Outcome: Persistence	
Variable	*B*	*SE*	*B*	*SE*	*B*	*SE*
Intercept	6.13**	0.20	9.18**	0.46	9.08**	0.61
Condition	-0.78*	0.30	0.10	0.31	0.45	0.38
Difficulty	--	--	-0.65**	0.07	-0.81**	0.08
Residual variance	4.51**	0.37	4.48**	0.41	6.35**	0.65
R^2	3.2%	--	30.6%	--	34.0%	--

Note. N = 201. Unstandardized coefficients are reported. Condition is coded as 0 = no addendum, 1 = easy addendum.
* $p < .01$, ** $p < .001$

Table 4

Means, Standard Deviations, and Correlations Among Study 3 Variables

Variable	*M*	*SD*	1	2	3	4	5	6	7	8
1. Age	20.43	1.08	--							
2. Gender	1.37	0.51	-.17**	--						
3. Condition	0.51	0.50	.18**	-.01	--					
4. Difficulty	3.49	1.46	.01	.16**	-.28**	--				
5. Persistence	0.67	0.47	-.04	-.08	.14*	-.43**	--			
6. Total words[a]	389.88	155.38	-.06	-.04	.19**	-.25**	.19**	--		
7. Avg. difficult[b]	88.61	34.84	-.10	-.05	-.04	-.22**	.17**	.96**	--	
8. Avg. easy[c]	35.05	19.00	-.02	.03	--	.05	.01	.74**	.60**	--

Note. $N = 273$. Values on the diagonal represent scale reliability. Gender is coded 1 = male, 2 = female, 3 = other, 4 = prefer not to say. Condition is coded 0 = no addendum, 1 = easy addendum. Persistence (to complete responding 4 additional emails) is coded 0 = no, 1 = yes.

a. Total number of words written for all the emails.

b. Average number of words written for difficult emails.

c. Average number of words written for easy emails. Only recorded for the easy addendum condition. $N = 138$.

* $p < .05$. ** $p < .01$.

Table 5

Results of Mediation Model in Study 3

	Mediator: Difficulty		Outcome: Persistence (0 = no, 1 = yes)	
Variable	*B*	*SE*	*B*	*SE*
Intercept	3.90*	0.12	3.25*	0.50
Condition	-0.81*	0.17	0.09	0.30
Difficulty	--	--	-0.70*	0.11
R^2/pseudo R^2	7.8%	--	15.4%	--

Note. $N = 273$. Unstandardized coefficients are reported. Condition is coded as 0 = no addendum, 1 = easy addendum. McFadden pseudo R^2 is reported for the logistic regression model.
* $p < .001$.

Table 6

Means, Standard Deviations, and Correlations Among Study 4 Variables

Variable	*M*	*SD*	1	2	3	4
1. Age	40.28	12.37	--			
2. Gender	0.58	0.49	.04	--		
3. Condition	1.51	1.11	.02	.05	--	
4. Difficulty	4.49	1.68	.03	.09	.03	--

Note. $N = 489$. Values on the diagonal represent scale reliability. Gender is coded 0 = male, 1 = female. Condition is coded 0 = no addendum, 1 = easy addendum, 2 = easy start, 3 = easy in the middle.

Table 7

Study 4 Results

Statistic	No addendum	Easy Addendum	Easy Start	Easy in the Middle	*F*	*P*	η_p^2
M	4.64	4.15	4.56	4.62	6.94	.009	.014
SD	1.79	1.70	1.51	1.69			
Contrasts/Coding							
1	1	-1	0	0	5.19	.023	.011
2	0	-1	1	0	3.75	.053	.008
3	0	-1	0	1	4.93	.027	.010
4	1	0	-1	0	0.14	.714	<.001
5	1	0	0	-1	0.01	.946	<.001

Note. N = 489. Contrast 1 compares the easy addendum condition versus the no addendum condition. Contrast 2 compares the easy addendum condition versus the easy start condition. Contrast 3 compares the easy addendum condition versus the easy in the middle condition. Contrast 4 compares the easy start condition versus the no addendum condition. Contrast 5 compares the easy in the middle condition versus the no addendum condition.

Table 8

Means, Standard Deviations, and Correlations Among Study 5 Variables

Variable	*M*	*SD*	1	2	3	4	5	6	7
1. Age	20.54	0.95	--						
2. Gender	0.42	0.49	-.08	--					
3. Condition	1.00	0.82	.05	.00	--				
4. Two Types	4.26	2.04	-.10	.04	.00	--			
5. Difficulty	4.18	1.58	-.10	.19**	-.02	.09	--		
6. Easy Attempts[a]	1.71	0.90	.00	-.05	.05	-.03	.16*	--	
7. Difficult Attempts[b]	3.26	1.72	.01	.03	.05	.03	.27**	.27**	--

Note. $N = 291$. Values on the diagonal represent scale reliability. Gender is coded 0 = male, 1 = female. Condition is coded 0 = no addendum, 1 = easy addendum, 2 = low category distinctiveness.

a. Average number of attempts for easy sliders. Only recorded for easy addendum and low category distinctiveness conditions. $N = 194$.

b. Average number of attempts for difficult sliders.

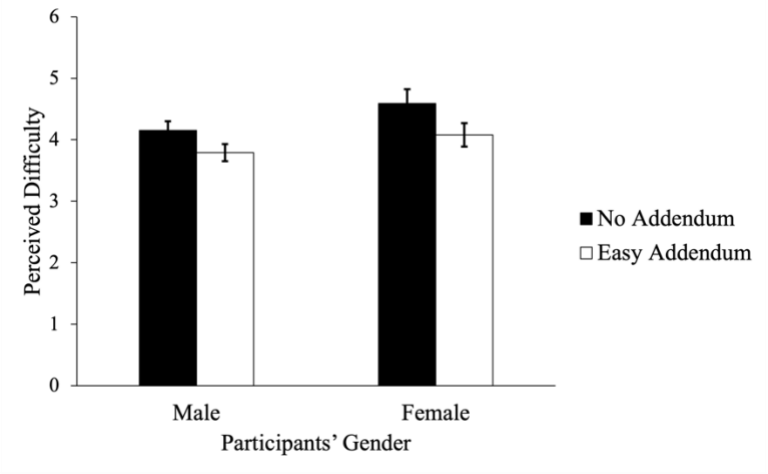
* $p < .05$. ** $p < .01$.

Appendix A: Study 1 Additional Analyses

In the primary analyses, we replicated the easy addendum effect. Participants in the easy addendum condition perceived the activity as less difficult than those in the no addendum condition. See Figure A1 for means by condition and gender.

Figure A1

Perceived Difficulty by Condition and Gender (Study 1)



Note. Error bars represent 1 standard error (*SE*) for the respective conditions.

Appendix B: Study 3 Additional Analyses

We conducted additional analyses using Python 3.9.7 (Van Rossum & Drake, 2009) and the packages "pandas" (McKinney, 2010, Version 1.3.4) and "NumPy" (Harris et al., 2020, Version 1.20.3). We calculated the number of words participants wrote in each of their customer service emails. We averaged the number of words for the four difficult queries and the two easy queries, respectively. We also summed the total number of words for the four queries in the no addendum condition and the six queries in the easy addendum condition. For participants in the easy addendum condition, a repeated measures ANOVA was significant ($F(1, 137) = 520.70$, $p < .001$, $\eta_p^2 = .792$). Participants wrote 2.49 times more words on average for the difficult emails than for the easy emails ($M_{difficult} = 87.39$, $SD = 33.74$ vs. $M_{easy} = 35.05$, $SD = 19.00$, $d = 1.94$). Thus, our manipulation of level of difficulty was successful. For the four difficult emails, the average number of words written did not differ across the two conditions ($M_{no\text{-}addendum} = 89.86$, $SD = 36.01$ vs. $M_{easy\text{-}addendum} = 87.39$, $SD = 33.74$, $d = 0.07$, $F(1, 271) = 0.345$, $p = .558$, $\eta_p^2 = .001$). However, after accounting for all their emails, participants in the easy addendum condition ($M_{easy\text{-}addendum} = 419.65$, $SD = 160.74$, 6 emails in total) wrote more words than those in the no addendum condition ($M_{no\text{-}addendum} = 359.46$, $SD = 144.05$, 4 emails in total; $d = 0.39$, $F(1, 271) = 10.60$, $p = .001$, $\eta_p^2 = .038$). This confirmed that participants did exert more effort in the easy addendum condition, and despite this decided to complete a subsequent similar task.

We conducted an additional 2 (between: no addendum vs. easy addendum) x 4 (within: 4 difficult queries) mixed ANOVA on the number of words participants written for the four difficult queries. The results only showed a main effect of the 4 queries ($F(3, 269) = 152.91$, $p < .001$, $\eta_p^2 = .630$. Both the main effect of condition and the interaction were not significant (Fs

< 0.36, *p*s > .558, η_p^2s <.004). This confirmed that there was variability in the four difficult queries for participants in both conditions.

Appendix C: Study 5 Additional Analyses

Additional Analyses of Results by Lab

Considering the lab availability at the time of conducting this study, we recruited participants from two large U.S. universities. Our findings were similar for each of the universities. Detailed comparisons of the two samples are provided in Tables C1-C3.

Table C1

Demographics by Lab

Variable	University A	University B
Gender (% of Females)	37.3%	50.0%
Age	20.44 (0.98)	20.74 (0.84)

Note. Standard deviations in parentheses.

Table C2

Two-way ANOVA by Condition and Lab

	Condition		Lab		Interaction	
Measure	F	*p*	F	*P*	F	*p*
Difficulty	3.88	.022	14.07	<.001	0.09	.912
Two types of sliders	25.09	<.001	2.37	.125	1.25	.289

Table C3

Means and Standard Deviations by Condition and Lab

		Lab		University A – B Simple Effect	
Measure	Condition	University A	University B	F	*p*
Difficulty	No Add.	4.61 (1.49)	3.98 (1.60)	3.61	.058
	Easy Add.	4.04 (1.60)	3.34 (1.55)	4.40	.037
	Low Cate.	4.61 (1.36)	3.79 (1.70)	6.25	.013
Two types of sliders	No Add.	3.63 (1.86)	3.67 (1.59)	0.01	.916
	Easy Add.	5.77 (1.64)	4.94 (1.93)	4.37	.038
	Low Cate.	3.75 (2.06)	3.48 (1.89)	0.45	.503

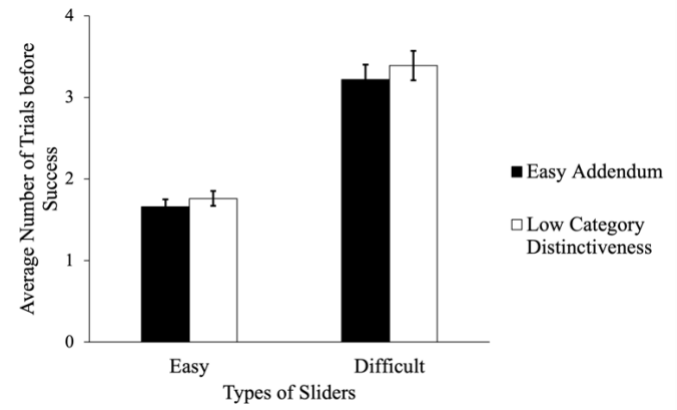
Note. Standard deviations in parentheses.

Additional Analyses on the Number of Attempts

We also recorded the number of attempts participants made before achieving validation for each slider. We averaged the number of attempts for the 10 difficult sliders and the 3 easy sliders separately. A 2 (easy addendum vs. low category distinctiveness) x 2 (difficult vs. easy sliders) mixed ANOVA on the average number of attempts yielded a non-significant interaction, $F(1, 192) = 0.10$, $p = .75$, $\eta_p^2 = .001$. On average, participants conducted more attempts for the difficult sliders ($M_{difficult} = 3.30$, $SD = 1.81$) than the easy ones ($M_{easy} = 1.71$, $SD = 0.90$, $d = 1.11$, $F(1, 192) = 152.89$, $p < .001$, $\eta_p^2 = .44$). More importantly, a follow-up contrast showed that the number of attempts for the easy sliders did not differ significantly between the easy addendum and low category distinctiveness conditions ($M_{easy\text{-}addendum} = 1.66$, $SD = 0.90$ vs. $M_{low\text{-}category\text{-}distinctiveness} = 1.76$, $SD = 0.89$, $d = 0.10$, $F(1, 192) = 0.52$, $p = .47$, $\eta_p^2 = .003$; see Figure C1). Together, this suggests that easy sliders in the easy addendum with low category distinctiveness condition were objectively easier to complete than the difficult ones in the focal task and did not differ from the easy sliders in the easy addendum condition, yet participants in the easy addendum condition subjectively perceived the activity overall as easier.

Figure C1

Average Number of Trials by Condition and Types of Sliders (Study 5)



Note. Error bars represent 1 standard error (SE) for the respective conditions.