# Online Appendix for "A Reexamination of the Impact of Decision Conflict on Choice Deferral"

## Appendix A: Study S1 – Replication of Tversky & Shafir (1992)

Study S1 was a direct replication of Tversky and Shafir (1992, p. 360). The authors reported that participants in their study were more likely to defer choice when offered to select between two CD players—a SONY and an AIWA player—compared to when they were offered just the SONY player in isolation. We randomly assigned 404 participants (51% female, $M_{age}$ = 35.8, mTurk) to one of four experimental conditions. Although the original study featured two conditions, "SONY single-option" versus "two-option conflict set" that included a SONY and an AIWA player, we updated the stimuli by replacing AIWA (discontinued in 2006) with a similar TOSHIBA player and added two additional conditions for the sake of completeness. Specifically, we also included a condition where the TOSHIBA player was presented in isolation (similar to the SONY single-option condition). Further, we included a second two-option condition that was adapted from Shafir et al. (1993) in which the SONY player was a dominating option. Shafir et al. observed that deferral was lower in the two-option condition where SONY is dominating compared to the two-option condition where there is no dominating option. Stimuli and choice shares for each condition are presented below:

> <u>SONY single-option</u>
> Suppose you are considering buying a compact disc (CD) player, and have not yet decided what model to buy. You pass by a store that is having a one-day clearance sale. They offer a popular SONY player for just $99, well below the list price. Do you
> -buy the SONY player [33%]
> -wait until you learn more about the various models [67%]
>
> <u>TOSHIBA single-option</u>
> Suppose you are considering buying a compact disc (CD) player, and have not yet decided what model to buy. You pass by a store that is having a one-day clearance sale. They offer a top-of-the-line TOSHIBA player for just $159, well below the list price. Do you
> -buy the TOSHIBA player [25.7%]
> -wait until you learn more about the various models [74.3%]
>
> <u>Two-option conflict set</u>
> Suppose you are considering buying a compact disc (CD) player, and have not yet decided what model to buy. You pass by a store that is having a one-day clearance sale. They offer a popular SONY player for just $99, and a top-of-the-line TOSHIBA player for just $159, both well below the list price. Do you
> -buy the SONY player [37.3%]
> -buy the TOSHIBA player [11.8%]

-wait until you learn more about the various models [51%]

Two-option dominance set
Suppose you are considering buying a compact disc (CD) player, and have not yet decided what model to buy. You pass by a store that is having a one-day clearance sale. They offer a popular SONY player for just $99, well below the list price, and an inferior TOSHIBA player for the regular list price of $105. Do you
-buy the SONY player [58.4%]
-buy the TOSHIBA player [3%]
-wait until you learn more about the various models [38.6%]

Tversky and Shafir reported higher choice deferral rates in the two-option conflict condition (46%) compared to the SONY single option condition (34%); we did not replicate this result. Instead, we observed the reverse: choice deferral was significantly lower in the two-option conflict condition (51%) compared to the SONY single option condition (67%; Wald $\chi^2 = 5.30$, $p = .021$) and also compared to the TOSHIBA single option condition (74.3%; Wald $\chi^2 = 11.43$, $p = .001$). Further, we found that deferral was only marginally lower in the two-option dominance condition (38.6%) compared to the two-option conflict condition (51%; Wald $\chi^2 = 3.12$, $p = .077$). We acknowledge that the interpretation of this study (as well as Study S2 below) is complicated by the fact that ordinary consumers no longer purchase compact disc players.

## Appendix B: Study S2 – Replication of Dhar (1997)

We randomly assigned 402 participants (53% female, $M_{age}$ = 36, mTurk) to one of three experimental conditions of a replication of the study of Dhar (1997, p. 218-221). We used the exact same stimuli as in Dhar (two alternatives differing on two features: see p. 219). Similar to Dhar, we used two no-choice options. Stimuli and choice shares for each condition are presented below:

Panasonic single-option
Suppose you consider buying an answering machine. You consider the following option:
Panasonic
30 Min. Incoming Messages
1 Outgoing Message
Voice Time/Day Stamp
Digital Messaging System
Special Price: $39.95
Last Day

What would you do?
-I would buy the Panasonic answering machine [14.2%]
-I would collect more information [44%]
-I would look for new alternatives [41.8%]

AT & T single-option
Suppose you consider buying an answering machine. You consider the following option:
AT & T
15 Min. Incoming Messages
2 Outgoing Messages
Voice Time/Day Stamp
Digital Messaging System
Special Price: $39.95
Last Day

What would you do?
-I would buy the AT & T answering machine [9.8%]
-I would collect more information [42.9%]
-I would look for new alternatives [47.4%]

Two-option set
Suppose you consider buying an answering machine. You consider the following options:

| | |
|---|---|
| Panasonic | AT & T |
| 30 Min. Incoming Messages | 15 Min. Incoming Messages |
| 1 Outgoing Message | 2 Outgoing Messages |
| Voice Time/Day Stamp | Voice Time/Day Stamp |
| Digital Messaging System | Digital Messaging System |
| Special Price: $39.95 | Special Price: $39.95 |
| Last Day | Last Day |

What would you do?

-I would buy the Panasonic answering machine [42.2%]
-I would buy the AT & T answering machine [28.1%]
-I would collect more information [19.3%]
-I would look for new alternatives [10.4%]

Dhar reports that the proportion of participants that require more information does not differ between the two-option and one-option conditions (7%). Further, Dhar reports that participants are more likely to look for new alternatives in the two-option (51%) compared to the single-option condition (35%).

We do not replicate these results. We find that participants in the two-option condition are significantly less likely to look for new alternatives (10.4%) compared to their counterparts that were exposed to the Panasonic machine in isolation (41.8%; Wald $\chi^2(1) = 30.19$, $p < .001$) but also compared to those that were exposed to the AT & T machine in isolation (47.4%; Wald $\chi^2(1) = 38.31$, $p < .001$). Similarly, we find that participants in the two-option condition are significantly less likely to collect additional information (19.3%) compared to their counterparts that were exposed to the Panasonic machine in isolation (44%; Wald $\chi^2(1) = 18.28$, $p < .001$) but also compared to those that were exposed to the AT & T machine in isolation (42.9%; Wald $\chi^2(1) = 16.75$, $p < .001$).

## Appendix C: Studies S3-S10 – Conceptual Replications of Tversky & Shafir (1992)

Studies S3-S10 were conceptual replications of Dhar (1997) and Tversky and Shafir (1992) using a wide range of stimuli. Participants in Studies S3-S10 were assigned to one of three choice set conditions (except for Study S9 that featured two choice set conditions; see Table S1 for more information on our stimuli). In the control, two-option condition participants were shown two alternatives presenting a trade-off. In the treatment conditions participants were shown one of these two options in isolation. Participants in all conditions had the option to defer choice; deferral was labeled as either refusal to buy any of the available options (e.g., "I would not buy a camera") or as a willingness to search for more options (e.g., "I would search for other options"). We consistently replicated our basic result (Table S1). With the exception of Study S9, participants were more—rather than less—likely to defer choice when they were presented with one as opposed to two options.

Table S1
*Stimuli and Results of Studies S3-S10 (p values based on Wald $\chi^2$ in logistic regressions)*

| | | | |
|---|---|---|---|
| **Study S3 (Toshiba Canvio; n = 312: 67.3% male, $M_{age}$ = 33.2, MTurk)** | | | |
| Participants imagined that they wanted to buy a Toshiba USB external hard drive. Participants saw either one or both of the following models: 500GB [$57.89], 750GB [$61.99]. All models were described as having the following common attributes: USB 3.0-powered portable add-on storage; Easy to use with no software to install; Protects your drive (Internal Shock Sensor and Ramp Loading Technology). The no-choice option stated "I would search for other options." | | | |
| | Two-option | 500GB Single | 750GB Single |
| 500GB | 4% | 40.6% | |
| 750GB | 90% | | 50% |
| No-choice | 6% | 59.4% | 50% |
| Change in Deferral | | +53.4% ($p < .001$) | +44% ($p < .001$) |
| **Study S4 (Canon CyberShot; n = 306: 65.4% female, $M_{age}$ = 33.6, MTurk)** | | | |
| Participants were asked to imagine that they considered buying a Canon PowerShot camera. Participants were presented with either one or both of the following options: SX170 [$219, capture impressive 720p HD video, powerful 16x optical zoom], SX510 [$249, capture beautiful 1080p full HD video, powerful 30x optical zoom]. The no-choice option stated "I would not buy a camera." | | | |
| | Two-option | SX170 Single | SX510 Single |
| SX170 | 11.9% | 45.5% | |
| SX510 | 80.2% | | 62.5% |
| No-choice | 7.9% | 54.5% | 37.5% |
| Change in Deferral | | +46.6% ($p < .001$) | +29.6% ($p < .001$) |
| **Study S5 (The Hobbit: An Unexpected Journey; n = 305: 59.3% male, $M_{age}$ = 33.7, MTurk)** | | | |
| Participants were asked to imagine that they considered buying the Blu-ray disc of the movie The Hobbit as a birthday present for a friend. They were told that their friend has both a Blu-ray player and | | | |

a 3D TV so he can watch all different versions of the Blu-ray disc. Participants were provided with either one or both of the following options: Extended [$35, 3D: no, runtime: 3 hrs 2 mins], 3D Extended [$60, 3D: yes, runtime: 3 hrs 2 mins]. The no-choice option stated "I would search for another option."

| | Two-option | 3D Extended Single | Extended Single |
|---|---|---|---|
| 3D Extended Edition | 25% | 47.1% | |
| Extended Edition | 65% | | 51.5% |
| No-choice | 10% | 52.9% | 48.5% |
| Change in Deferral | | +42.9% ($p < .001$) | +38.5% ($p < .001$) |

**Study S6 (SONY Walkman; n = 301: 66.1% male, $M_{age}$ = 29.3, MTurk)**

Participants imagined that they considered buying a SONY Walkman. They were presented with either one or both of the following options: 8GB [85$], 16GB [$95]. All models were described as having the following common attributes: digital music, video & photo player with FM radio; rechargeable battery with up to 30 hours audio playback. The no-choice option stated "I would not buy a Walkman."

| | Two-option | 8GB Single | 16GB Single |
|---|---|---|---|
| 8GB | 3.9% | 16.2% | |
| 16GB | 79.4% | | 26% |
| No-choice | 16.7% | 83.8% | 74% |
| Change in Deferral | | +67.1% ($p < .001$) | +57.3% ($p < .001$) |

**Study S7 (Restaurants 1; n = 302: 59.6% male, $M_{age}$ = 32.5, MTurk)**

Participants were asked to imagine that they were planning to have dinner with some friends. They were presented with either one or both of the following options: Restaurant A [8 miles away, average rating: 7], Restaurant B [11 miles away, average rating: 9]. The no-choice option stated "I would search for other options."

| | Two-option | Restaurant A Single | Restaurant B Single |
|---|---|---|---|
| Restaurant A | 4.9% | 50.5% | |
| Restaurant B | 87.3% | | 67.3% |
| No-choice | 7.8% | 49.5% | 32.7% |
| Change in Deferral | | +41.7% ($p < .001$) | +24.9% ($p < .001$) |

**Study S8 (Restaurants 2; n = 304: 55.9% female, $M_{age}$ = 36.2, MTurk)**

Participants were asked to imagine that they were planning to have dinner with some friends. They were presented with either one or both of the following options: Restaurant A [8 miles away, average rating: 7], Restaurant B [18 miles away, average rating: 9]. The no-choice option stated "I would wait until I learn more about various restaurants."

| | Two-option | Restaurant A Single | Restaurant B Single |
|---|---|---|---|
| Restaurant A | 40.2% | 31.7% | |
| Restaurant B | 41.2% | | 40.6% |
| No-choice | 18.6% | 68.3% | 59.4% |
| Change in Deferral | | +49.7% ($p < .001$) | +40.8% ($p < .001$) |

**Study S9 (Money; n = 214: 51.9% female, $M_{age}$ = 35.6, MTurk)**

Participants were told to suppose that they have some spare money. Participants in the single-option condition were asked whether they would save that money or consider other options and decide later (i.e., defer). Participants in the two-option condition were asked whether they would save that money, buy a gift for themselves, or consider other options and decide later (i.e., defer).

| | Two-option | Single-Option |
|---|---|---|
| Save money | 54.2% | 68.2% |
| Buy gift | 8.4% | |
| No-choice | 37.4% | 31.8% |
| Change in Deferral | | –5.6% ($p = .389$) |

**Study S10 (Money 2; n = 190: 50% female, $M_{age}$ = 36, MTurk)**

Participants were told to suppose that they have some spare money that they could spend. Participants in the single-option condition were asked whether they would go out with friends or think about other options (i.e., defer). Participants in one two-option condition were asked whether they would go out with friends, go out with their significant other, or think about other options (i.e., defer). Participants in another two-option condition were asked whether they would go out with friends, buy something nice for themselves, or think about other options (i.e., defer).

| | Two-option I | Two-option II | Single-Option |
|---|---|---|---|
| Go out with friends | 10.8% | 23.4% | 16.4% |
| Go out with sign. other | 38.5% | | |
| Buy something for self | | 28.1% | |
| No-choice | 50.8% | 48.4% | 83.6% |
| Change in Deferral | | vs. two-option I: | +32.8% ($p < .001$) |
| | | vs. two-option II: | +35.2% ($p < .001$) |

## Appendix D: Studies S11-S16 – Comparability and Information as Moderators

Studies S11-S16 tested moderators that pertain to the information provided by—as well as the comparability of—the choice options (see Table S2). A few key insights emerged. First, we replicated our basic result across all studies. Participants were less likely to defer choice when they were presented with two options compared to when they were faced with a single alternative. Second, we managed to influence the magnitude of this effect by introducing various moderators that pertain to the information provided. Studies S11 and S12 show that our basic result was less pronounced when the two options comprising the binary set belonged to different product categories (e.g., a camera and a speaker) compared to when they belonged to the same product category (e.g., two cameras). Presumably, it was easier for participants to compare options and make a decision when the options were directly comparable. Studies S13 and S14 show that our basic result can be attenuated when one of the alternatives is not excluded from the set altogether, but instead is simply made a "phantom" option that is unavailable for choice. This attenuation of our basic result was more robust when the phantom was the alternative that was infrequently-chosen (vs. predominantly-chosen) in the binary set. Studies S15 and S16 show that our basic result can be attenuated when we provide participants with a reference point suggesting that the single option is relatively attractive compared to the reference. Overall, the data from Studies S11-S16 provide further support for the proposition that deferral is driven by changes in decision-makers' ability to evaluate the two options when they are presented jointly versus in isolation, rather than by decision conflict.

Table S2

*Stimuli and Results of Studies S11-S16 (p values based on Wald $\chi^2$ in logistic regressions)*

| **Study S11 (Comparability 1; n = 502: 52.6% female, $M_{age}$ = 35.9, MTurk)** |
|---|
| Participants were asked to suppose that they were passing by an electronics store that was having a one-day clearance sale. They were randomly assigned to one of three conditions (single option vs. two noncomparable options vs. two comparable options). Participants in the single option condition were presented with a product labeled Camera A [price: $99, megapixels: 18, optical zoom: 8x]. Participants in the two noncomparable options condition were presented with Camera A and another product labeled Tablet A [price: $119, storage: 32GB, screen size: 9.6in]. Participants in the two comparable options condition were presented with Camera A and Camera B [price: $119, megapixels: 20, optical zoom: 10x]. The no-choice option stated "I would search for other products." |

| | Single option | Two comparable options | Two noncomparable options |
|---|---|---|---|
| Camera A | 29.8% | 23.8% | 22.3% |
| Tablet A | | | 47% |
| Camera B | | 67.3% | |
| No-choice | 70.2% | 8.9% | 30.7% |

**Results**: Participants in the single-option condition deferred choice more frequently compared to their counterparts in the two-option conditions (both pairwise comparisons $p < .001$). Importantly, participants in the two comparable options condition were significantly less likely to defer choice compared to their counterparts in the two noncomparable options condition (8.9% vs. 30.7%, $p < .001$).

**Study S12 (Comparability 2; n = 810: 57.8% female, $M_{age}$ = 35.5, MTurk)**

Participants were asked to suppose that they were passing by an electronics store that was having a one-day clearance sale. They were randomly assigned to one of six conditions (single (Digital Camera A) vs. single (Digital Camera B) vs. single (Bluetooth Speaker A) vs. two options (Digital Camera A and Digital Camera B) vs. two options (Digital Camera A and Bluetooth Speaker A) vs. two options (Digital Camera B and Bluetooth Speaker A)). The stimuli were: Digital Camera A [price: $189, megapixels: 24, optical zoom: 16x], Digital Camera B [price: $99, megapixels: 12, optical zoom: 8x], Bluetooth Speaker A [price: $89, output: 10W, battery life: 10 hours]. The no-choice option was labeled as search for other options.

| | Single (Camera A) | Single (Camera B) | Single (Speaker A) |
|---|---|---|---|
| Camera A | 27.9% | | |
| Camera B | | 28.1% | |
| Speaker A | | | 31.1% |
| No-choice | 72.1% | 71.9% | 68.9% |

| | Two comparable options (Camera A and Camera B) | Two noncomparable options (Camera A and Speaker A) | Two noncomparable options (Camera B and Speaker A) |
|---|---|---|---|
| Camera A | 59% | 31.3% | |
| Camera B | 19.4% | | 24.4% |
| Speaker A | | 26.1% | 31.9% |
| No-choice | 21.6% | 42.5% | 43.7% |

**Results**: Participants in the single-option conditions deferred choice more frequently compared to their counterparts in the two-option conditions (all pairwise comparisons $p < .001$). Importantly, participants in the two comparable options condition were significantly less likely to defer choice compared to their counterparts in the two noncomparable options conditions (21.6% vs. 42.5%, $p < .001$ and 21.6% vs. 43.7%, $p < .001$).

**Study S13 (Phantoms 1; n = 506: 53.2% female, $M_{age}$ = 34.8, MTurk)**

Participants were asked to imagine that they considered buying a Canon PowerShot camera. Participants were randomly assigned to one of five experimental conditions. Three conditions were identical to Study S4 above where participants were presented with either one or both of the following options: SX170 [$219, capture impressive 720p HD video, powerful 16x optical zoom], SX510 [$249, capture beautiful 1080p full HD video, powerful 30x optical zoom]. ). We added two single option phantom conditions where, instead of removing all information about one of the cameras, we simply described that alternative as "out of stock," while the target was described as "in stock." Therefore participants were exposed to the (phantom) alternative, but did not have the option to select it. The no-choice option stated "I would not buy a camera."

| | Two-option | SX170 Single | SX510 Single |
|---|---|---|---|
| SX170 | 6.9% | 53.5% | |
| SX510 | 87.3% | | 48.5% |
| No-choice | 5.9% | 46.5% | 51.5% |

| | | SX510 Phantom | SX170 Phantom |
|---|---|---|---|
| SX170 | | 33.3% | |
| SX510 | | | 82.7% |
| No-choice | | 66.7% | 17.3% |

**Results**: Compared to the two-option condition, participants were more likely to defer choice when the SX170 was completely absent from the set (5.9% vs. 51.5%, $p < .001$); this result was largely attenuated when the SX170 was a phantom (5.9% vs. 17.3%, $p = .015$). Further, compared to the two-option condition, participants were more likely to defer choice when the SX510 was completely absent from the set (5.9% vs. 46.5%, $p < .001$); this result was more pronounced when the SX510 was a phantom (5.9% vs. 66.7%, $p < .001$).

**Study S14 (Phantoms 2; n = 503: 57.3% male, $M_{age}$ = 34.7, MTurk)**

Participants were asked to imagine that they were planning to have dinner with some friends. Participants were randomly assigned to one of five experimental conditions. Three conditions were identical to Study 1g above where participants were presented with either one or both of the following options: Restaurant A [8 miles away, average rating: 7], Restaurant B [11 miles away, average rating: 9]. We added two single option phantom conditions where, instead of removing all information about one alternative, we provided an additional sentence which stated that "unfortunately, Restaurant A/B is fully booked." Therefore participants were exposed to the (phantom) alternative, but did not have the option to select it. The no-choice option stated "I would search for other options."

| | Two-option | Restaurant A Single | Restaurant B Single |
|---|---|---|---|
| Restaurant A | 4% | 47% | |
| Restaurant B | 93.1% | | 75.2% |
| No-choice | 3% | 53% | 24.8% |

| | | Restaurant B Phantom | Restaurant A Phantom |
|---|---|---|---|
| Restaurant A | | 75% | |
| Restaurant B | | | 92.1% |
| No-choice | | 25% | 7.9% |

**Results**: Compared to the two-option condition, participants were more likely to defer choice when Restaurant A was completely absent from the set (3% vs. 24.8%, $p < .001$); this result was largely attenuated when Restaurant A was a phantom (3% vs. 7.9%, $p = .136$). Further, compared to the two-option condition, participants were more likely to defer choice when Restaurant B was completely absent from the set (3% vs. 53%, $p < .001$); this result was attenuated when Restaurant B was a phantom (3% vs. 25%, $p < .001$).

**Study S15 (Toshiba Canvio; n = 601: 53.6% female, $M_{age}$ = 34.9, MTurk)**

Control

Participants imagined that they wanted to buy a Toshiba USB external hard drive. Participants randomly saw either one or two models. 1TB [$62.99], 3TB [$68.99]. All models were described as having the following common attributes: USB 3.0-powered portable add-on storage; Easy to use with no software to install; Protects your drive (Internal Shock Sensor and Ramp Loading Technology). The no-choice option stated "I would search for other options."

| | Two-option | 1TB Single | 3TB Single |
|---|---|---|---|
| 1TB | 5% | 57% | |
| 3TB | 95% | | 61% |
| No-choice | 0% | 43% | 39% |
| Change in Deferral | | +43% ($p < .001$) | +39% ($p < .001$) |

Reference Point

Participants in the reference point conditions were provided with an additional sentence stating: "an average hard drive has 2TB of capacity and costs $65.99."

| | Two-option | 1TB Single | 3TB Single |
|---|---|---|---|
| 1TB | 7% | 24% | |

| | | | |
|---|---|---|---|
| 3TB | 91% | | 88.1% |
| No-choice | 2% | 76% | 11.9% |
| Change in Deferral | | +74% ($p < .001$) | +9.9% ($p = .03$) |
| Moderation by Reference Point | | $p < .001$ | $p < .001$ |

Note: In this study, *p* values stem from a linear regression because a logit model could not be accurately estimated (because the deferral rate in the two-option control condition is 0%).

**Study S16 (SONY Walkman; n = 602: 51.7% male, $M_{age}$ = 33.3, MTurk)**

Control

Participants imagined that they considered buying a SONY Walkman. They were presented with either one or both of the following options: 8GB [85$], 32GB [$105]. All models were described as having the following common attributes: digital music, video & photo player with FM radio; rechargeable battery with up to 30 hours audio playback. The no-choice option stated "I would search for other options."

| | Two-option | 8GB Single | 32GB Single |
|---|---|---|---|
| 8GB | 9% | 10.9% | |
| 32GB | 80% | | 24% |
| No-choice | 11% | 89.1% | 76% |
| Change in Deferral | | +79.1% ($p < .001$) | +65% ($p < .001$) |

Reference Point

Participants in the reference point conditions were provided with additional information which stated that the price and capacity for Sony Walkman models ranged from $85 to $105 and from 8GB to 32GB respectively.

| | Two-option | 8GB Single | 32GB Single |
|---|---|---|---|
| 8GB | 12.1% | 16.8% | |
| 32GB | 76.8% | | 48.5% |
| No-choice | 11.1% | 83.2% | 51.5% |
| Change in Deferral | | +72.1% ($p < .001$) | +40.4% ($p < .001$) |
| Moderation by Reference Point | | $p = .401$ | $p = .043$ |

## Appendix E: Studies S17-S23 – Choice Set Attractiveness as a Moderator

Using a range of stimuli, Studies S17-S23 provide additional evidence that the absolute attractiveness of the choice options moderates the impact of the choice set on deferral (see Table S3). However, note that we obtained statistically significant evidence for the finding reported by Tversky and Shafir (1992), Shafir et al. (1993), and Dhar (1997) in only one study (Study S22).

Table S3
*Stimuli and Results of Studies S17-S23 (p values based on Wald $\chi^2$ in logistic regressions)*

| | | | |
|---|---|---|---|
| **Study S17 (Bluetooth speakers; n = 803: 52.4% female, $M_{age}$ = 35, MTurk)** | | | |
| Low Attractiveness | | | |
| Participants were asked to suppose that they considered buying a Bluetooth speaker, and that they passed by an electronics store that was having a one-day clearance sale. Participants were presented with either one or both of the following options: SONY [battery life: 16 hours, price: $94.99 (list price: $99.99)], BOSE [battery life: 16 hours, price: $94.99 (list price: $99.99)]. The no-choice option stated "wait until you learn more about the various models." | | | |
| | Two-option | SONY Single | BOSE Single |
| SONY | 15.6% | 4.5% | |
| BOSE | 37.8% | | 16.7% |
| No-choice | 46.7% | 95.5% | 83.3% |
| Change in Deferral | | +48.8% ($p < .001$) | +36.6% ($p < .001$) |
| High Attractiveness | | | |
| Participants were asked to suppose that they considered buying a Bluetooth speaker, and that they passed by an electronics store that was having a one-day clearance sale. Participants were presented with either one or both of the following options: SONY [battery life: 16 hours, price: $9.99 (list price: $99.99)], BOSE [battery life: 16 hours, price: $9.99 (list price: $99.99)]. The no-choice option stated "wait until you learn more about the various models." | | | |
| | Two-option | SONY Single | BOSE Single |
| SONY | 20.5% | 71.9% | |
| BOSE | 47% | | 77.2% |
| No-choice | 32.6% | 28.1% | 22.8% |
| Change in Deferral | | –4.5% ($p = .432$) | –9.8% ($p = .075$) |
| Moderation | | $p < .001$ | $p < .001$ |
| Main Effect of Attractiveness ($Deferral_{low\ attr}$ = 75% vs. $Deferral_{high\ attr}$ = 27.8%, $p < .001$) | | | |
| **Study S18 (Bluetooth speakers 2; n = 799: 52.4% female, $M_{age}$ = 36.8, MTurk)** | | | |
| Low Attractiveness | | | |
| Participants were asked to suppose that they considered buying a Bluetooth speaker, and that they passed by an electronics store. Participants were presented with either one or both of the following options: an old SONY Bluetooth speaker for $199, old JBL Bluetooth speaker for $199. The no-choice option stated "wait until you learn more about the various models." | | | |
| | Two-option | SONY Single | JBL Single |
| SONY | 18.8% | 6.7% | |
| JBL | 11.3% | | 6.1% |
| No-choice | 69.9% | 93.3% | 93.9% |
| Change in Deferral | | +23.4% ($p < .001$) | +24% ($p < .001$) |

| High Attractiveness | | | |
|---|---|---|---|
| Participants were asked to suppose that they considered buying a Bluetooth speaker, and that they passed by an electronics store that was having a one-day clearance sale. Participants were presented with either one or both of the following options: a top-of-the-line SONY Bluetooth speaker for just $19, and a top-of-the-line JBL Bluetooth speaker for just $19, both well below the list price. The no-choice option stated "wait until you learn more about the various models." | | | |
| | Two-option | SONY Single | JBL Single |
| SONY | 45.5% | 59.7% | |
| JBL | 11.4% | | 64.7% |
| No-choice | 43.2% | 40.3% | 35.3% |
| Change in Deferral | | –2.9% ($p$ = .634) | –7.9% ($p$ = .192) |
| Moderation by Attractiveness | | $p$ < .001 | $p$ < .001 |
| Main Effect of Attractiveness ($Deferral_{low\ attr}$ = 85.8% vs. $Deferral_{high\ attr}$ = 39.6%, $p$ < .001) | | | |
| **Study S19 (Bluetooth speakers 3; n = 612: 57.7% female, $M_{age}$ = 36, MTurk)** | | | |
| Low Attractiveness | | | |
| Participants were asked to suppose that they considered buying a Bluetooth speaker, and that they passed by an electronics store that was having a one-day clearance sale. Participants were presented with either one or both of the following options: SONY [battery life: 16 hours, price: $94.99 (list price: $99.99)], JBL [battery life: 16 hours, price: $94.99 (list price: $99.99)]. The no-choice option stated "I would not buy a Bluetooth speaker." | | | |
| | Two-option | SONY Single | JBL Single |
| SONY | 46.1% | 18.8% | |
| JBL | 21.6% | | 19.4% |
| No-choice | 32.4% | 81.2% | 80.6% |
| Change in Deferral | | +48.8% ($p$ < .001) | +48.2% ($p$ < .001) |
| High Attractiveness | | | |
| Participants were asked to suppose that they considered buying a Bluetooth speaker, and that they passed by an electronics store that was having a one-day clearance sale. Participants were presented with either one or both of the following options: SONY [battery life: 16 hours, price: $9.99 (list price: $99.99)], JBL [battery life: 16 hours, price: $9.99 (list price: $99.99)]. The no-choice option stated "I would not buy a Bluetooth speaker." | | | |
| | Two-option | SONY Single | JBL Single |
| SONY | 62.4% | 83.3% | |
| JBL | 28.7% | | 88.3% |
| No-choice | 8.9% | 16.7% | 11.7% |
| Change in Deferral | | +7.8% ($p$ = .103) | +2.8% ($p$ = .521) |
| Moderation by Attractiveness | | $p$ = .007 | $p$ = .001 |
| Main Effect of Attractiveness ($Deferral_{low\ attr}$ = 64.7% vs. $Deferral_{high\ attr}$ = 12.4%, $p$ < .001) | | | |
| **Study S20 (Bluetooth speakers 4; n = 806: 55.7% female, $M_{age}$ = 35.3, MTurk)** | | | |
| Low Attractiveness | | | |
| Participants were asked to suppose that they considered buying a Bluetooth speaker, and that they passed by an electronics store that was having a one-day clearance sale. Participants were presented with either one or both of the following options: SONY [battery life: 16 hours, price: $94.99 (list price: $99.99)], JBL [battery life: 16 hours, price: $94.99 (list price: $99.99)]. The no-choice option stated "I would decide later." | | | |
| | Two-option | SONY Single | JBL Single |
| SONY | 52.6% | 7.5% | |
| JBL | 16.5% | | 10.3% |
| No-choice | 30.8% | 92.5% | 89.7% |
| Change in Deferral | | +61.7% ($p$ < .001) | +58.9% ($p$ < .001) |

High Attractiveness

Participants were asked to suppose that they considered buying a Bluetooth speaker, and that they passed by an electronics store that was having a one-day clearance sale. Participants were presented with either one or both of the following options: SONY [battery life: 16 hours, price: $4.99 (list price: $99.99)], JBL [battery life: 16 hours, price: $4.99 (list price: $99.99)]. The no-choice option stated "I would decide later."

| | Two-option | SONY Single | JBL Single |
|---|---|---|---|
| SONY | 62.7% | 84.4% | |
| JBL | 20.1% | | 88.1% |
| No-choice | 17.2% | 15.6% | 11.9% |
| Change in Deferral | | –1.6% ($p$ = .721) | –5.3% ($p$ = .218) |
| Moderation by Attractiveness | | $p$ < .001 | $p$ < .001 |

Main Effect of Attractiveness ($Deferral_{low_attr}$ = 71.1% vs. $Deferral_{high_attr}$ = 14.9%, $p$ < .001)

**Study S21 (Sneakers; n = 1,208: 51.3% female, $M_{age}$ = 36.8, MTurk)**

Low Attractiveness

Participants were asked to suppose that they considered buying new sneakers, and that they passed by a store that was having a one-day clearance sale. Participants were presented with either one or both of the following options: Adidas [price: $94.99 (list price: $99.99)], Nike [price: $94.99 (list price: $99.99)]. The no-choice option stated "I would search for other options."

| | Two-option | Adidas Single | Nike Single |
|---|---|---|---|
| Adidas | 7.9% | 6.5% | |
| Nike | 23.8% | | 10.4% |
| No-choice | 68.3% | 93.5% | 89.6% |
| Change in Deferral | | +25.2% ($p$ < .001) | +21.3% ($p$ < .001) |

High Attractiveness

Participants were asked to suppose that they considered buying new sneakers, and that they passed by a store that was having a one-day clearance sale. Participants were presented with either one or both of the following options: Adidas [price: $9.99 (list price: $99.99)], Nike [price: $9.99 (list price: $99.99)]. The no-choice option stated "I would search for other options."

| | Two-option | Adidas Single | Nike Single |
|---|---|---|---|
| Adidas | 34.5% | 95% | |
| Nike | 61% | | 90.6% |
| No-choice | 4.5% | 5% | 9.4% |
| Change in Deferral | | +0.5% ($p$ = .832) | +4.9% ($p$ = .059) |
| Moderation by Attractiveness | | $p$ = .002 | $p$ = .234 |

Main Effect of Attractiveness ($Deferral_{low_attr}$ = 83.8% vs. $Deferral_{high_attr}$ = 6.3%, $p$ < .001)

**Study S22 (TVs; n = 801: 54.3% female, $M_{age}$ = 35.7, MTurk)**

Low Attractiveness

Participants were asked to suppose that they considered buying a new TV, and that they passed by an electronics store that was having a one-day clearance sale. Participants were presented with either one or both of the following options: Samsung [resolution: 720p, picture quality: good, price: $399 (list price: $499)], LG [resolution: 720p, picture quality: good, price: $399 (list price: $499)]. The no-choice option stated "wait until you learn more about the various models."

| | Two-option | Samsung Single |
|---|---|---|
| Samsung | 32.5% | 19% |
| LG | 11.5% | |
| No-choice | 56% | 81% |
| Change in Deferral | | +25% ($p$ < .001) |

High Attractiveness

Participants were asked to suppose that they considered buying a new TV, and that they passed by an electronics store that was having a one-day clearance sale. Participants were presented with either one or both of the following options: Samsung [resolution: 4K, picture quality: pro, price: $99 (list price: $799)], LG [resolution: 4K, picture quality: pro, price: $99 (list price: $799)]. The no-choice option stated "wait until you learn more about the various models."

| | Two-option | Samsung Single |
|---|---|---|
| Samsung | 35.5% | 74.1% |
| LG | 18% | |
| No-choice | 46.5% | 25.9% |
| Change in Deferral | | –20.6% ($p < .001$) |
| Moderation by Attractiveness | | $p < .001$ |
| Main Effect of Attractiveness ($Deferral_{low_attr}$ = 68.5% vs. $Deferral_{high_attr}$ = 36.2%, $p < .001$) | | |

**Study S23 (Computers; n = 1,561: 61.2% female, $M_{age}$ = 37.3, MTurk)**

Low Attractiveness

Participants were asked to suppose that they considered buying a new computer, and that they passed by an electronics store that was having a one-day clearance sale. Participants were presented with either one or both of the following options: Brand A [processor: Intel i5, storage: 64GB, price: $599 (list price: $799), Brand B [processor: Intel i3, storage: 128GB, price: $599 (list price: $799)]. In this study, we manipulated the frame of the no-choice option: "wait until I learn more about this computer and other options" vs. "I would not buy Brand A/either computer."

No-choice: Wait

| | Two-option | Brand A Single | Brand B Single |
|---|---|---|---|
| Brand A | 20% | 13.1% | |
| Brand B | 50% | | 12.3% |
| No-choice | 30% | 86.9% | 87.7% |
| Change in Deferral | | +56.9% ($p < .001$) | +57.7% ($p < .001$) |

No-choice: Not buy

| | Two-option | Brand A Single | Brand B Single |
|---|---|---|---|
| Brand A | 34.6% | 40.8% | |
| Brand B | 53.1% | | 29.2% |
| No-choice | 12.3% | 59.2% | 70.8% |
| Change in Deferral | | +46.9% ($p < .001$) | +58.5% ($p < .001$) |

High Attractiveness

Participants were asked to suppose that they considered buying a new computer, and that they passed by an electronics store that was having a one-day clearance sale. Participants were presented with either one or both of the following options: Brand A [processor: Intel i7, storage: 256GB, price: $99 (list price: $999), Brand B [processor: Intel i5, storage: 512GB, price: $99 (list price: $999)]. We manipulated the frame of the no-choice option: "wait until I learn more about this computer and other options" vs. "I would not buy Brand A/either computer."

No-choice: Wait

| | Two-option | Brand A Single | Brand B Single |
|---|---|---|---|
| Brand A | 32.6% | 29.8% | |
| Brand B | 42.6% | | 41.1% |
| No-choice | 24.8% | 70.2% | 58.9% |
| Change in Deferral | | +45.4% ($p < .001$) | +34.1% ($p < .001$) |

No-choice: Not buy

| | Two-option | Brand A Single | Brand B Single |
|---|---|---|---|
| Brand A | 41.5% | 81.7% | |
| Brand B | 47.7% | | 72.5% |
| No-choice | 10.8% | 18.3% | 27.5% |

| | | |
|---|---|---|
| Change in Deferral | +7.5% ($p = .087$) | +16.7% ($p = .001$) |
| Moderation by Attractiveness (across frames) | $p < .001$ | $p < .001$ |
| Main Effect of Attractiveness ($Deferral_{low_attr} = 57.8\%$ vs. $Deferral_{high_attr} = 35.1\%$, $p < .001$) | | |

## Appendix F: Studies S24-S28 – Relative Attractiveness as a Moderator

Studies S24-S28 provide evidence that the difference in the relative attractiveness of the choice options (Study S24), as well as variations in the exchange rates of the attributes (Studies S25-S28) do not moderate the impact of the choice set on deferral (see Table S4). The results of Study S24 (see also Study 5 in our manuscript) are inconsistent with the notion that decision-makers should be more likely to defer when the decision is relatively difficult (i.e., when the options are equally attractive; see Tversky and Shafir, 1992; see also Shafir et al. 1993; Dhar 1997). Our findings are largely the same when the two options are equally attractive compared to when one of the options is more attractive than the other. Further, data of Studies S25-S28 show that our findings are not sensitive to variations in the exchange rate of the attributes, hence providing further evidence for the robustness of our results.

Table S4

*Stimuli and Results of Studies S24-S28 (p values based on Wald $\chi^2$ in logistic regressions)*

| **Study S24 (Toasters; n = 604: 57.3% female, $M_{age}$ = 38.3, MTurk)** | | | |
|---|---|---|---|
| Equally Attractive | | | |
| Participants were asked to imagine that they considered buying a toaster. Participants were told that, at the store, they found one or two of the following alternatives: Kmart store brand (price: $16.99), Black & Decker (price: $18.99). Both options were described as having the following common attributes: 2 wide slots; mechanism centers bread in slot; automatically pops the toast up when done; removable crumb tray. The no-choice option stated "I would search for other options." | | | |
| | Two-option | Kmart Single | Black & Decker Single |
| Kmart | 51% | 43.1% | |
| Black & Decker | 43% | | 41.6% |
| No-choice | 6% | 56.9% | 58.4% |
| Change in Deferral | | +50.9% ($p < .001$) | +52.4% ($p < .001$) |
| Difference in Attractiveness | | | |
| Participants were asked to imagine that they considered buying a toaster. Participants were told that, at the store, they found one or two of the following alternatives: Kmart store brand (price: $10.99), Black & Decker (price: $24.99). Both options were described as having the following common attributes: 2 wide slots; mechanism centers bread in slot; automatically pops the toast up when done; removable crumb tray. The no-choice option stated "I would search for other options." | | | |
| | Two-option | Kmart Single | Black & Decker Single |
| Kmart | 70.3% | 56% | |
| Black & Decker | 20.8% | | 38% |
| No-choice | 8.9% | 44% | 62% |
| Change in Deferral | | +35.1% ($p < .001$) | +53.1% ($p < .001$) |
| Moderation by Attractiveness | | $p = .125$ | $p = .654$ |
| Main Effect of Attractiveness ($Deferral_{small_diff}$ = 40.6% vs. $Deferral_{large_diff}$ = 38.6%, $p = .548$) | | | |
| **Study S25 (Backpacks; n = 505: 50.5% male, $M_{age}$ = 34.8, MTurk)** | | | |

Participants were asked to imagine that they wanted to buy a backpack, and they considered the following option(s). They were randomly assigned to one of five conditions (single option vs. additional vertically differentiated unattractive option vs. additional vertically differentiated attractive option vs. additional horizontally differentiated unattractive option vs. additional horizontally differentiated attractive option). Participants in the single option condition were presented with a product labeled Backpack A [capacity (lt): 40, weight (lb): 0.7, color: grey, price: $20]. Participants in the additional vertically differentiated unattractive option were also provided with the following alternative: Backpack B [capacity (lt): 30, weight (lb): 0.6, color: grey, price: $19]. Participants in the additional vertically differentiated attractive option were provided with the following alternative instead: Backpack B [capacity (lt): 30, weight (lb): 0.6, color: grey, price: $8]. Participants in the additional horizontally differentiated unattractive option were also provided with the following alternative instead: Backpack B [capacity (lt): 40, weight (lb): 0.7, color: orange, price: $20]. Participants in the additional horizontally differentiated attractive option were also provided with the following alternative instead: Backpack B [capacity (lt): 40, weight (lb): 0.7, color: black, price: $20]. The no-choice option stated "I would search for other options."

| | Backpack A Single | Vert. Unattr. Option | Vert. Attract. Option |
|---|---|---|---|
| Backpack A | 37.3% | 75.5% | 29% |
| Backpack B | | 21.6% | 63% |
| No-choice | 62.7% | 2.9% | 8% |
| Change in Deferral | | –59.8% ($p < .001$) | –54.7% ($p < .001$) |
| Main Effect of Relative Attractiveness ($Deferral_{vert_unattr}$ = 2.9% vs. $Deferral_{vert_attract}$ = 8%, $p = .128$) | | | |
| | | Horiz. Unattr. Option | Horiz. Attract. Option |
| Backpack A | | 73.7% | 33.3% |
| Backpack B | | 16.2 | 52.9% |
| No-choice | | 10.1% | 13.7% |
| Change in Deferral | | –52.6% ($p < .001$) | –49% ($p < .001$) |
| Main Effect of Attractiveness ($Deferral_{horiz_unattr}$ = 10.1% vs. $Deferral_{horiz_attract}$ = 13.7%, $p = .43$) | | | |

**Study S26 (Toshiba Canvio; n = 608: 50.7% female, $M_{age}$ = 34.1, MTurk)**

Difference in Attractiveness (Capacity is Prominent)

Participants were asked to imagine that they wanted to buy a Toshiba external hard drive. Participants were presented with either one or both of the following options: Toshiba Canvio 500GB [$57.89], Toshiba Canvio 750GB [$61.99]. All models were described as having the following common attributes: USB 3.0-powered portable add-on storage; Easy to use with no software to install; Protects your drive (Internal Shock Sensor and Ramp Loading Technology). The no-choice option stated "I would search for other options.

| | Two-option | 500GB Single | 750GB Single |
|---|---|---|---|
| 500GB | 6% | 34.3% | |
| 750GB | 87% | | 42.7% |
| No-choice | 7% | 65.7% | 57.3% |
| Change in Deferral | | +58.7% ($p < .001$) | +50.3% ($p < .001$) |

Difference in Attractiveness (Price is Prominent)

Participants were asked to imagine that they wanted to buy a Toshiba external hard drive. Participants were presented with either one or both of the following options: Toshiba Canvio 500GB [$27.89], Toshiba Canvio 750GB [$91.99]. All models were described as having the following common attributes: USB 3.0-powered portable add-on storage; Easy to use with no software to install; Protects your drive (Internal Shock Sensor and Ramp Loading Technology). The no-choice option stated "I would search for other options.

| | Two-option | 500GB Single | 750GB Single |
|---|---|---|---|
| 500GB | 86.3% | 53.5% | |
| 750GB | 8.8% | | 26% |

| | | | |
|---|---|---|---|
| No-choice | 4.9% | 46.5% | 74% |
| Change in Deferral | | +41.6% ($p < .001$) | +69.1% ($p < .001$) |
| Moderation by Attractiveness | | $p = .540$ | $p = .094$ |
| Main Effect of Attractiveness ($Deferral_{cap_prom}$ = 43.6% vs. $Deferral_{price_prom}$ = 41.6%, $p = .614$) | | | |
| **Study S27 (Cars; n = 608: 57.6% female, $M_{age}$ = 34.1, MTurk)** | | | |
| Difference in Attractiveness (Ride Quality is Prominent) | | | |
| Participants were asked to imagine that they considered buying a car. Participants were presented with either one or both of the following options: Brand A [ride quality: 83, price: $30,000], Brand B [ride quality: 73, price: $28,000]. The no-choice option stated "I would not buy a car." | | | |
| | Two-option | Brand A | Brand B |
| Brand A | 64.1% | 31.1% | |
| Brand B | 19.4% | | 28.3% |
| No-choice | 16.5% | 68.9% | 71.7% |
| Change in Deferral | | +52.4% ($p < .001$) | +55.2% ($p < .001$) |
| Difference in Attractiveness (Price is Prominent) | | | |
| Participants were asked to imagine that they considered buying a car. Participants were presented with either one or both of the following options: Brand A [ride quality: 83, price: $40,000], Brand B [ride quality: 73, price: $18,000]. The no-choice option stated "I would not buy a car." | | | |
| | Two-option | Brand A | Brand B |
| Brand A | 11.2% | 16.7% | |
| Brand B | 77.6% | | 27.2% |
| No-choice | 11.2% | 83.3% | 72.8% |
| Change in Deferral | | +72.1% ($p < .001$) | +61.6% ($p < .001$) |
| Moderation by Attractiveness | | $p = .019$ | $p = .336$ |
| Main Effect of Attractiveness ($Deferral_{ride_prom}$ = 52.1% vs. $Deferral_{price_prom}$ = 56.4%, $p = .287$) | | | |
| **Study S28 (Amazon gift certificates; n = 603: 60.4% male, $M_{age}$ = 33.3, MTurk)** | | | |
| Difference in Attractiveness (Data Storage is Prominent) | | | |
| Participants were asked to imagine that they had won a gift certificate at a lottery held by Amazon, and that they could choose (one of) the following gift certificate(s) or search for other options: A: $40 certificate that can be used towards the purchase of data storage products (e.g., USB flash drives, external hard drives, etc.), B: $10 certificate that can be used towards the purchase of music products (e.g., audio CDs, stream music, etc.). | | | |
| | Two-option | A Single | B Single |
| A | 73.7% | 22.8% | |
| B | 8.1% | | 21% |
| No-choice | 18.2% | 77.2% | 79% |
| Change in Deferral | | +59% ($p < .001$) | +60.8% ($p < .001$) |
| Difference in Attractiveness (Music is Prominent) | | | |
| Participants were asked to imagine that they had won a gift certificate at a lottery held by Amazon, and that they could choose (one of) the following gift certificate(s) or search for other options: A: $10 certificate that can be used towards the purchase of data storage products (e.g., USB flash drives, external hard drives, etc.), B: $40 certificate that can be used towards the purchase of music products (e.g., audio CDs, stream music, etc.). | | | |
| | Two-option | A Single | B Single |
| A | 25.5% | 24% | |
| B | 55.9% | | 25.7% |
| No-choice | 18.6% | 76% | 74.3% |
| Change in Deferral | | +57.4% ($p < .001$) | +55.7% ($p < .001$) |
| Moderation by Attractiveness | | $p = .842$ | $p = .551$ |
| Main Effect of Attractiveness ($Deferral_{A_prom}$ = 58.3% vs. $Deferral_{B_prom}$ = 56.1%, $p = .580$) | | | |

## Appendix G: Study S29 – Perceptual vs. Numeric Representation of the Attributes

Frederick, Lee, and Baskin (2014) observed that the attraction effect—whereby introducing an asymmetrically dominated option to a binary set leads to an increase in the choice of the dominating option—does not arise when one of the product attributes is represented perceptually (vs. numerically). We were curious to examine whether attribute representation could also moderate the basic result that we report in this paper. This study was pre-registered at aspredicted.org (https://aspredicted.org/ng89w.pdf).

We randomly assigned 904 participants (51% female, $M_{age}$ = 37.6, mTurk) to one of six experimental conditions of a TV choice problem adapted from Frederick, Lee, and Baskin (2014). Participants imagined that they considered buying a television and that they found the following option(s). Participants randomly were provided with either one or two options that differed in picture quality and price. Option A had a relatively high picture quality and price ($503). Option B had a relatively low picture quality and price ($350). We experimentally manipulated whether picture quality was represented visually versus numerically. For our visual representation conditions, we used the same images as Frederick, Lee, and Baskin (2014). For our numeric representation conditions, similar to Frederick et al. (2014), we used the average ratings of the picture quality of the two images that were derived from a separate group of 151 participants. The average ratings of picture quality of A and B were 7.7 and 4.4 respectively. Participants were asked whether they would buy one of the options or defer choice (worded as "search for other options").

We replicated our basic result across both representation conditions. When picture quality was represented numerically, we found that deferral was lower in the two-option condition than in the A (44% vs. 87.4%: Wald $\chi^2 = 54.44$, $p < .001$) and B (44% vs. 89.3%: Wald $\chi^2 = 57.72$, $p < .001$) single-option conditions. Our results were slightly stronger when picture quality was represented visually. We found that deferral was lower in the two-option condition than in the A (35.8% vs. 93.4%: Wald $\chi^2 = 76.85$, $p < .001$; interaction term: Wald $\chi^2 = 4.96$, $p = .026$) and B (35.8% vs. 88.1%: Wald $\chi^2 = 72.75$, $p < .001$; interaction term: Wald $\chi^2 = .26$, $p = .614$) single-option conditions.

## Appendix H: Study S30 – Conceptual Replication of Tversky and Shafir's S1 (1992)

We decided to conduct a conceptual replication of Tversky and Shafir's study (1992). The original study featured choices between pairs of apartments that differed in terms of price and distance from campus. In this replication, we replaced distance with the general condition of the apartment. Prior research provides robust evidence of context effects in choices between apartments that differ on general condition and price (e.g., Evangelidis et al. 2018; Simonson 1989). This study was pre-registered at aspredicted.org (https://aspredicted.org/ed2kj.pdf).

We recruited 1,204 respondents (54.5% female, $M_{age}$ = 37.6) through Amazon's Mechanical Turk. All participants first viewed a master list of 12 apartments with the goal of familiarizing themselves with the available options. We constructed three sets of four apartments each. We created four pairs of apartments in each set for a total of 12 pairs. In half of these pairs, one apartment dominated the other (dominance pairs). In the other half, the two apartments presented trade-offs between price and general condition (conflict pairs). Participants were randomly assigned to one of these pairs. Thus, half of our participants viewed two apartments where one dominated the other (dominance conditions), whereas the other half viewed two apartments that presented trade-offs (conflict conditions). For example, stimuli for two of these pairs are presented below (see other pairs in Table S5):

> Dominance
> Imagine that you face a choice between two apartments with the following characteristics:
>
> | Apartment | Monthly rent | General condition (out of 100) |
> |---|---|---|
> | A | $860 | 86 |
> | B | $860 | 85 |
>
> Both have one bedroom and a kitchenette. You can choose now between the two apartments or you can continue to search for apartments (to be selected at random from the list you reviewed). In that case, there is some risk of losing one or both of the apartments you have found.
>
> Do you want to
> -search for another apartment [39.4%]
> -select between the available apartments [60.6%]
>
> Conflict
> Imagine that you face a choice between two apartments with the following characteristics:
>
> | Apartment | Monthly rent | General condition (out of 100) |
> |---|---|---|
> | A | $760 | 75 |

B $860 85

Both have one bedroom and a kitchenette. You can choose now between the two apartments or you can continue to search for apartments (to be selected at random from the list you reviewed). In that case, there is some risk of losing one or both of the apartments you have found.

Do you want to
-search for another apartment [31%]
-select between the available apartments [69%]

Participants were only asked whether they wanted to search for another apartment or select between the available apartments. We did not record participants' choice of an apartment. Similar to Tversky and Shafir (1992), we were interested in differences between the dominance and conflict conditions on participants' proclivity to defer choice (i.e., search for another apartment). Tversky and Shafir report that participants in their study were less likely to defer choice in the dominance compared to the conflict conditions. We found evidence opposite to Tversky and Shafir. Participants in the dominance conditions were significantly more—rather than less—likely to defer choice compared to their counterparts in the conflict conditions (collapsed across choice pairs: 43.9% vs. 33.7%: Wald $\chi^2 = 12.96$, $p < .001$).

Table S5
*Stimuli and Results of Study S30 (p values based on Wald $\chi^2$ in logistic regressions)*

| | |
|---|---|
| **Dominance Pairs** | |
| | Deferral (%) |
| A [monthly rent: $710, general condition: 71 (out of 100)]<br>B [monthly rent: $710, general condition: 70 (out of 100)] | 59% |
| A [monthly rent: $810, general condition: 81 (out of 100)]<br>B [monthly rent: $810, general condition: 80 (out of 100)] | 22.8% |
| A [monthly rent: $740, general condition: 74 (out of 100)]<br>B [monthly rent: $740, general condition: 73 (out of 100)] | 53.5% |
| A [monthly rent: $840, general condition: 84 (out of 100)]<br>B [monthly rent: $840, general condition: 83 (out of 100)] | 41.6% |
| A [monthly rent: $760, general condition: 76 (out of 100)]<br>B [monthly rent: $760, general condition: 75 (out of 100)] | 47% |
| A [monthly rent: $860, general condition: 86 (out of 100)]<br>B [monthly rent: $860, general condition: 85 (out of 100)] | 39.4% |
| **Conflict Pairs** | |
| A [monthly rent: $710, general condition: 71 (out of 100)] | 27.3% |

| | |
|---|---|
| B [monthly rent: $810, general condition: 81 (out of 100)] | |
| A [monthly rent: $710, general condition: 70 (out of 100)]<br>B [monthly rent: $810, general condition: 80 (out of 100)] | 34.3% |
| A [monthly rent: $740, general condition: 74 (out of 100)]<br>B [monthly rent: $840, general condition: 84 (out of 100)] | 38.6% |
| A [monthly rent: $740, general condition: 73 (out of 100)]<br>B [monthly rent: $840, general condition: 83 (out of 100)] | 41.6% |
| A [monthly rent: $760, general condition: 76 (out of 100)]<br>B [monthly rent: $860, general condition: 86 (out of 100)] | 29.4% |
| A [monthly rent: $760, general condition: 75 (out of 100)]<br>B [monthly rent: $860, general condition: 85 (out of 100)] | 31% |

## Appendix H: Study S31 – Additional Conceptual Replication of Tversky and Shafir's S1 (1992)

In Studies 6a, 6b, and S30 we failed to replicate Tversky and Shafir's (1992) first study where the authors found evidence supporting the hypothesis that decision-makers are more likely to defer choice when the choice between two options presents trade-offs (i.e., when the choice is difficult) compared to when one option is strictly better than the other (i.e., when the choice is easy). Study S31 provides an additional test of this hypothesis using five different sets of stimuli. Further, in Study S31 we use a more exhaustive manipulation of decision conflict. This study was pre-registered at aspredicted.org (https://aspredicted.org/5ri48.pdf).

We recruited 2,005 respondents (51.2% female, $M_{age}$ = 38) through Amazon's Mechanical Turk. Participants were randomly assigned to one of fifteen experimental conditions of a 5 (choice problem: backpacks vs. Bluetooth speakers vs. hard drives vs. restaurants vs. toasters) by 3 (choice set: dominance (no tradeoffs) vs. low conflict (easy tradeoffs) vs. high conflict (difficult tradeoffs)) between-participants design. All participants were provided with two options and we manipulated the differences in attributes between the options. Participants could choose an option or defer choice (worded as "wait until you learn more about the various models/restaurants/backpacks"). Stimuli for each choice problem are presented below:

> Backpacks
> Suppose you are considering buying a backpack, and have not yet decided what to buy. You pass by a store that is having a one-day clearance sale. They offer a 30L backpack for $29.99 and a 50L backpack for [dominance: $29.99/low conflict: $39.99/high conflict: $49.99].
>
> Bluetooth speakers
> Suppose you are considering buying a Bluetooth speaker, and have not yet decided what model to buy. You pass by a store that is having a one-day clearance sale. They offer a popular SONY speaker for $59.99 and a top-of-the-line BOSE speaker for [dominance: $59.99/low conflict: $89.99/high conflict: $119.99].
>
> Hard drives
> Suppose you are considering buying a hard drive, and have not yet decided what model to buy. You pass by a store that is having a one-day clearance sale. They offer a 2TB drive for $39.99 and a 4TB drive for [dominance: $39.99/ low conflict: $59.99/high conflict: $79.99].
>
> Restaurants

> Suppose you are considering going to a restaurant for dinner, and have not yet decided where to go. You are considering two restaurants. Restaurant A has an average rating of 4.2 (out of 5) and is 8 miles away. Restaurant B has an average rating of 4.6 (out of 5) and is [dominance: 8 miles away/ low conflict: 12 miles away/ high conflict: 16 miles away].
>
> Toasters
> Suppose you are considering buying a toaster, and have not yet decided what model to buy. Amazon is having a one-day clearance sale. They offer a popular AmazonBasics toaster for $19.99 and a top-of-the-line Black+Decker toaster for [dominance: $19.99/low conflict: $29.99/high conflict: $39.99].

Based on Tversky and Shafir (1992), we expected that participants in the dominance conditions would be less likely to defer choice compared to their counterparts in the two conflict conditions and that deferral rates in the low conflict conditions would be lower than those in the high conflict conditions. Note, however, that the latter hypothesis was not empirically tested by Tversky and Shafir (1992), but can be derived from their theoretical account.

Overall, we found very limited evidence for these predictions (See Table S6). Participants in the dominance conditions were significantly less likely to defer choice compared to their counterparts in the conflict conditions in only one of the choice problems ((*backpacks*: dominance vs. low conflict: 50% vs. 53.4%, Wald $\chi^2 = .30$, $p = .582$; dominance vs. high conflict: 50% vs. 54.9%, Wald $\chi^2 = .63$, $p = .426$), (*Bluetooth speakers*: dominance vs. low conflict: 31.9% vs. 56.7%, Wald $\chi^2 = 16.47$, $p < .001$; dominance vs. high conflict: 31.9% vs. 66.9%, Wald $\chi^2 = 31.52$, $p < .001$), (*hard drives*: dominance vs. low conflict: 29.9% vs. 31.3%, Wald $\chi^2 = .07$, $p = .791$; dominance vs. high conflict: 29.9% vs. 33.3%, Wald $\chi^2 = .38$, $p = .539$), (*restaurants*: dominance vs. low conflict: 43.3% vs. 34.3%, Wald $\chi^2 = 2.26$, $p = .133$; dominance vs. high conflict: 43.3% vs. 40.3%, Wald $\chi^2 = .25$, $p = .62$), (*toasters*: dominance vs. low conflict: 35.8% vs. 44.8%, Wald $\chi^2 = 2.23$, $p = .136$; dominance vs. high conflict: 35.8% vs. 37.1%, Wald $\chi^2 = .05$, $p = .826$)). Further, there were no statistically significant differences between the low and high conflict conditions in any of our five choice problems ($p$-values > .08).

Table S6
*Stimuli and Results of Study S31 (p values based on Wald $\chi^2$ in logistic regressions)*

| **Backpacks** |
|---|

| | Dominance | Low Conflict | High Conflict |
|---|---|---|---|
| 30L | 3% | 16.5% | 30.1% |
| 50L | 47% | 30.1% | 15% |
| No-choice | 50% | 53.4% | 54.9% |
| Change in Deferral | | +3.4% ($p$ = .582) | +4.9% ($p$ = .426) |
| **Bluetooth Speakers** | | | |
| | Dominance | Low Conflict | High Conflict |
| SONY | 11.1% | 26.1% | 21.8% |
| BOSE | 57% | 17.2% | 11.3% |
| No-choice | 31.9% | 56.7% | 66.9% |
| Change in Deferral | | +24.8% ($p$ < .001) | +35% ($p$ < .001) |
| **Hard Drives** | | | |
| | Dominance | Low Conflict | High Conflict |
| 2TB | 4.5% | 25.4% | 48.1% |
| 4TB | 65.7% | 43.3% | 18.5% |
| No-choice | 29.9% | 31.3% | 33.3% |
| Change in Deferral | | +1.4% ($p$ = .791) | +3.4% ($p$ = .539) |
| **Restaurants** | | | |
| | Dominance | Low Conflict | High Conflict |
| Restaurant A | 3.7% | 26.1% | 37.3% |
| Restaurant B | 53% | 39.6% | 22.4% |
| No-choice | 43.3% | 34.3% | 40.3% |
| Change in Deferral | | −9% ($p$ = .133) | −3% ($p$ = .620) |
| **Toasters** | | | |
| | Dominance | Low Conflict | High Conflict |
| AmazonBasics | 9% | 28.4% | 46.2% |
| Black+Decker | 55.2% | 26.9% | 16.7% |
| No-choice | 35.8% | 44.8% | 37.1% |
| Change in Deferral | | +9% ($p$ = .136) | +1.3% ($p$ = .826) |