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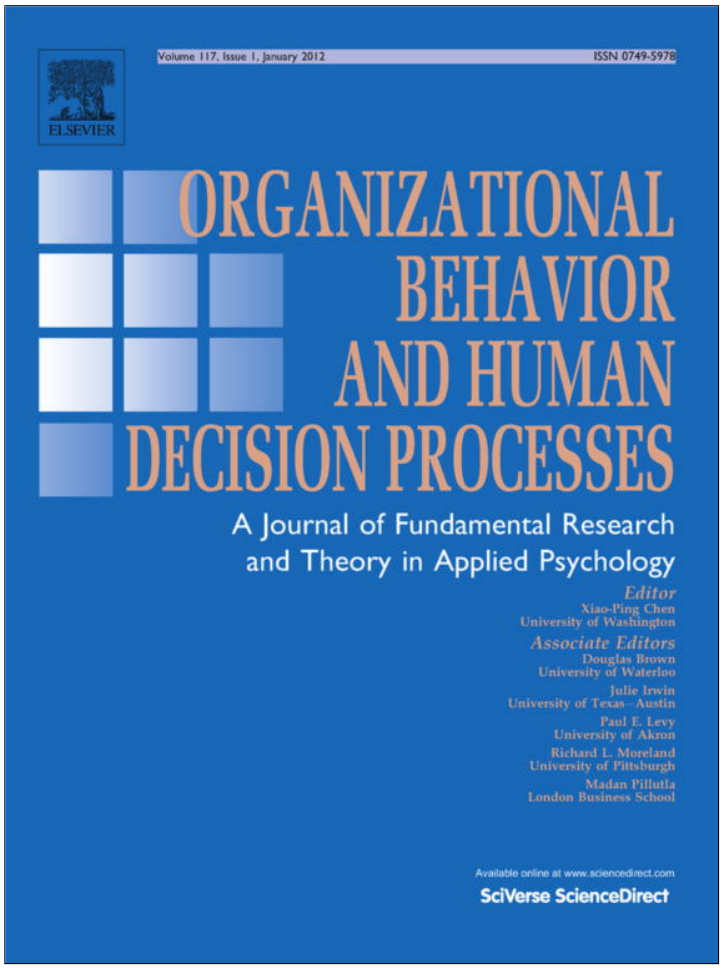


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# Policy bundling to overcome loss aversion: A method for improving legislative outcomes

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ABSTRACT

Policies that would create net benefits for society that contain salient costs frequently lack enough support for enactment because losses loom larger than gains. To address this consequence of loss aversion, we propose a policy-bundling technique in which related bills involving both losses and gains are combined to offset separate bills' costs while preserving their net benefits. We argue this method can transform unpopular individual pieces of legislation, which would lack the support for implementation, into more popular policies. Study 1 confirms that bundling increases support for bills with costs and benefits and that bundled legislation is valued more than the sum of its parts. Study 2 shows this finding stems from a diminished focus on losses and heightened focus on gains. Study 3 extends our findings to policies involving costs and benefits of the same type (e.g., lives) generated by different sources (e.g., food vs. fire safety).

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## Introduction

Imagine a local legislature faced with two unpopular pieces of legislation during an economic downturn. Suppose one unpopular bill under consideration would increase government spending by 10 million dollars at a time when deficits were soaring but would create 100 new, permanent jobs. Detractors would likely focus on the lost government dollars and feel that these losses were too great to bear. Suppose the second unpopular bill involved a budget-cutting measure that would eliminate 90 government jobs, reducing the deficit by 12 million dollars. The opposition would likely contest the lost jobs in a difficult economic climate. We argue that the losses inherent in legislation with both costs and benefits may be overweighted due to loss aversion (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992). However, we hypothesize that the combination of two bills with offsetting losses of the type outlined above into a single piece of legislation could combat this harmful psychological barrier to effective policy making. Specifically, we propose that bundled together, two unpopular bills of the type described above might, counter-normatively, be extremely popular because their separate losses would cancel to create net gains ($2 million in savings and 10 new jobs).

Citizens hope their elected representatives will pass legislation that creates net gains that outweigh costs—legislation that has positive expected value for society. However, Nobel Laureate Joseph Stiglitz (1998) has noted that policymakers often fail to pass such legislation, even when it has a high net positive expected value. Social scientists have pointed to the dysfunctional role of special-interest groups in contorting our political processes and contributing to suboptimal outcomes (Baron, 1998), and several cognitive explanations for the failure to pass legislation with positive expected value have also been discussed (Baron, Bazerman, & Shonk, 2006; Ritov & Baron, 2009). This paper highlights one cognitive barrier to passing such legislation – loss aversion – and proposes a solution.

The psychology and economics literature suggests that when proposing legislation that has both costs and benefits, legislators face an uphill battle due to the power of loss aversion, a cognitive predilection that causes individuals to weight losses more than equivalent gains (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992). Because losses loom larger than gains psychologically, when people evaluate policies with costs one at a time, policies involving costs that would still create net benefits for society may frequently be defeated. Policymakers would thus benefit from learning how to combat loss aversion and reduce its impact on the evaluation of legislation with both costs and benefits. We propose and test the effectiveness of a policy-bundling method that we argue has the potential to help address this issue.

Legislators frequently combine *unrelated* policies supported by different groups into a single bill to increase support for their legislation. For example, conservatives might add a consumer

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protection law to their proposed budget to garner liberal support. We propose a different type of bundling technique: one in which *related* policies are combined in a way that reduces the potentially harmful effects of the tendency to overweight losses relative to gains. Our proposed policy-bundling method combines one bill that has costs of Type A (e.g., acres of protected forest lost in Town 1) and benefits of Type B (e.g., jobs created in Town 1) with a matched bill that has the inverse structure: benefits of Type A (e.g., acres of protected forest created in Town 2) and costs of Type B (e.g., jobs lost in Town 2). The design is such that costs of a specific type (e.g., jobs lost in Town 2) in one bill must be offset by greater benefits of the same type (e.g., jobs created in Town 1) in the second bill (see Table 1), such that losses (although still present) will not be focal in the bundled legislation.

When single bills of the type described in Table 1 (e.g., *Single Bills 1* and *2*) are evaluated independently, we predict that losses will be comparatively more salient than in joint evaluation, and people's aversion to losses will drive high rates of opposition. We hypothesize, however, that if precisely the same information from the two separate bills is presented in a bundled piece of legislation (by presenting the separate bills in the same package), because net losses are offset by greater net benefits in the combined bill, gains will be comparatively more salient, and loss aversion will exert less influence. Thus, when a bundled bill is evaluated, we predict it will achieve considerably greater support (in votes) than either of its component bills and will in fact be valued more (in absolute currency) than the sum of its component parts, contradicting standard utility theory.

A practical implication of our prediction is that two policies involving losses might each lack the necessary support (e.g., a majority of voters voting "yes") to be enacted separately due to loss aversion. However, by bundling those two policies into a single package using our technique, our hypothesis is that their popularity would swell (due to a reduced focus on losses), leading to the enactment of both policies – a dramatic reversal of fortunes. Furthermore, in the case of one policy that barely musters approval and a second that falls below the threshold of approval, we predict that a strategic bundle of the type we propose could lead to a wildly popular piece of legislation that would result in both policies being enacted. Again, this would be a dramatic reversal of fortunes. Either outcome – two rejected policies or one rejected and one barely accepted policy receiving strong support in bundled form – would demonstrate the power of our proposed idea. This would make our bundling technique of considerable value to legislators, as well as to managers attempting to garner support for wise organizational policies. Furthermore, it would contradict neoclassical economic models.

The remainder of this paper is organized as follows. First, we review the relevant past research that gave rise to our bundling hypothesis. Next, we present Study 1, which tests the prediction that our proposed bundling technique results in combined policies that are more popular than either of their component pieces and that are valued more than the sum of their individual parts. In Study 2, we examine whether an increased focus on gains and decreased focus on losses in bundled legislation is responsible for the power of our proposed bundling technique. In Study 3, we test whether our bundling technique remains effective when the combined policies studied involve tradeoffs of the same type (e.g., human lives) but generated by different sources (e.g., food vs. fire safety) rather than identical ones. Finally, we conclude by discussing a number of implications of our findings, some of the limitations of this work, and directions for future research.

## Relevant past research

### Loss aversion

Prospect theory posits that people judge outcomes based on a subjective value function that decelerates in the domain of losses more quickly than it accelerates in the domain of gains (Kahneman & Tversky, 1979). This means that equivalent losses and gains impact judgments unevenly. Specifically, losses loom larger than equivalent gains: people expect the pain of a loss to be greater than the pleasure of an equal-sized gain.

Loss aversion has been demonstrated in lab settings; undergraduates are willing to accept a bet on a fair coin toss involving a 50% chance of losing $10 only if compensated with a 50% chance of winning at least $30 (Kahneman & Tversky, 1984). A widely used estimate of the prospect theory coefficient of loss aversion suggests that, on average, people value losses 2.25 times more than equivalent gains (Tversky & Kahneman, 1992). This finding has been used to explain numerous behavioral anomalies ranging from the equity premium puzzle (Benartzi & Thaler, 1995) to clients' preferences for contingent-fee arrangements with attorneys (Zamir & Ritov, 2010).

Recent field evidence of this tendency to weight losses more than equivalent gains has been gathered by examining the behavior of professional golfers (Pope & Schweitzer, 2011). Specifically, the performance of golfers putting for birdie vs. those putting for par has been compared on shots of equivalent difficulty. Par denotes the published, pre-determined number of strokes that a golfer should require to complete a hole. Achieving a birdie on a golf hole means relying on one fewer strokes than par. Putting for birdie takes place in the domain of gains – missing such a put leaves a player with an opportunity to achieve par (or expected performance) on a given golf hole. Putting for par places a player at risk of entering the domain of losses – missing such a put ensures that a player will underperform relative to par (expected performance) on a given hole. If losses loom larger than gains, then on an equally difficult put, those shooting for par will focus harder and make fewer errors than those shooting for birdie. This is exactly what researchers have found, providing evidence of loss aversion in the field.

Past research by Linville and Fischer (1991) has shown the benefits of loss-buffering, or combining a loss and a gain to make each more palatable. Policy-bundling is an idea built on this principle – that reducing the impact of (over-weighted) losses by pairing them with offsetting gains can have large payoffs.

Recent research has also illustrated the importance of context to the influence of loss aversion. McGraw, Larsen, Kahneman, and Schkade (2010) demonstrated that when evaluating the intensity of losses in the presence of gains, loss aversion is quite potent, but when evaluating the intensity of losses in comparison with

**Table 1**
Illustration of new policy bundling concept, where $n$, $m > 0$.

| | Impact on outcome A (*e.g., acres of protected forest*) | Impact on outcome B (*e.g., jobs*) |
|---|---|---|
| Single Bill 1 | Costs of size $X$ (*e.g., X acres lost*) | Benefits of size $Y$ (*e.g., Y jobs gained*) |
| Single Bill 2 | Benefits of size $X + n$ (*e.g., X + n acres gained*) | Costs of size $Y - m$ (*e.g., Y − m jobs lost*) |
| Combined Bill | Costs of size $X$ and benefits of size $X + n$ (*e.g., X acres lost and X + n other acres gained*) | Benefits of size $Y$ and costs of size $Y - m$ (*e.g., Y + m other jobs gained and Y jobs lost*) |

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other losses, loss aversion no longer exerts its power. Given that judging separate bills of the type illustrated in Table 1 involves the evaluation of losses in the presence of gains, the findings of McGraw et al. (2010) suggest that loss aversion will influence decision making when bills are evaluated separately, intensifying opposition to such bills. However, because combined bills involve side-by-side evaluations of losses, loss aversion may be considerably less potent in this context, increasing the power of the bundling technique we propose.

*Integrating vs. segregating losses*

The tendency to overweight losses relative to gains is just one of many predictions about human behavior formalized by prospect theory (Kahneman & Tversky, 1979). Prospect theory also postulates that when evaluating multiple, separate losses, people return to their reference point following each separate judgment. In addition, the slope of the prospect theory value function is decreasing in the magnitude of a loss. Taken together, this means that prospect theory predicts it is less painful to experience a loss of size $2X$ all at once rather than two, separate losses of size $X$ (Kahneman & Tversky, 1979). Past research on mental accounting has confirmed that people can benefit hedonically from integrating rather than segregating losses. For example, Soman and Gourville (2001) demonstrated that the experience of losing 1 day of skiing out of five on a vacation due to inclement weather is more bearable when a skier has purchased a single five-days pass rather than five single-day passes. This mental accounting research empirically illustrates prospect theory's prediction that integrated losses are less painful than separated losses. Thus, legislation that bundles together two separate losses of different types (as proposed in Table 1) may be valued more than the sum of its component parts because of the hedonic gains from integrating the losses involved.

It is worth noting that, on the flip side, prospect theory predicts that integrating gains reduces their hedonic value, and our bundling technique not only involves an integration of losses, but also an integration of gains. However, given that losses loom larger than gains, the hedonic benefit from an integration of losses may be greater than the hedonic deduction from an integration of gains, leading to a net benefit from bundling.

*Choice bracketing*

The hypotheses tested in the current paper are grounded in predictions emanating from prospect theory, as described above. However, other judgment and decision making research streams have suggested additional reasons why our bundling technique might enhance the appeal of legislation. One such literature has shown that how broadly choices are "bracketed" can dramatically affect the way people perceive the options they face (Fox & Tversky, 1998). Broad choice bracketing involves the evaluation of a choice in a context with multiple other options, while narrow bracketing does not. Recent research on policy evaluation has examined how moving from narrow to broader bracketing affects the strength of emotional responses to potential new policies. Ritov (2009) compared the role of emotional reaction vs. cognitive deliberation in participants' assessments of hypothetical proposed policies. They found that when participants assessed multiple policies, they were more influenced by cognitive evaluations of policy importance and less reliant on their emotional responses than when they were only considering a single policy. This work suggests that broadening the context of a judgment by presenting multiple policies simultaneously could help people make better and less emotional decisions.

Research in consumer behavior on the impact of examining two products of a certain type together rather than separately points to another potential benefit of broadened choice bracketing. Hsee and Leclerc (1998) have shown that two unpopular products can be made more popular by placing them side by side. Given that the goal of bundled legislation is to increase support for two potentially unpopular pieces of legislation, it may be the case that bundling increases support for separate pieces of legislation in part because it juxtaposes two unpopular options, which Hsee and Leclerc (1998) have demonstrated is beneficial because it changes an evaluator's reference point.

*Alignability*

Another stream of literature examining the comparability of choice attributes offers yet more suggestions as to why policy bundling could increase the appeal of bundled legislation. Standard utility theory predicts that the addition of a new alternative to a choice set cannot increase the probability of choosing a member of the original choice set (Luce, 1959, 1977; Mas-Colell, Whinston, & Green, 1995). This condition, called *regularity*, implies that the overall value assigned by decision makers to two bills combined cannot be greater than the sum of the values that the same decision makers would assign to each separate bill.

However, a number of conditions under which regularity does not hold have been identified. One recent stream of research has shown that the type of alternative added to a choice set affects whether regularity will be violated. This research has focused on the "alignability" of product attributes in a choice set. To illustrate the concept of alignability, consider a consumer comparing two alternatives. If those two alternatives were two cars with a number of easily comparable features, such as gas mileage, engine RPMs, etc., they would be considered "alignable." However, if those two alternatives were two kitchen appliances with entirely different functions (such as a blender and a dishwasher), they would not be considered alignable, as there would be no directly comparable features (such as gas mileage or RPM) to serve as a basis for product comparison (Johnson, 1984; Markman & Medin, 1995; Zhang & Markman, 1998).

A number of studies have demonstrated that adding an alignable alternative to a decision maker's choice set can lead to exceptions to the regularity condition because comparable alternatives help decision makers avoid the psychological conflict inherent in trading off gains and losses among alternatives (Gourville & Soman, 2005; Tversky & Shafir, 1992). Our policy-bundling technique may be effective in part because combining two bills with alignable components may make it easier for decision makers to evaluate the alternatives presented to them.

*Reason-based choice*

A final literature that contributes to our understanding of why policy bundling may be impactful has examined how complex decision contexts alter choices. Tversky and Shafir (1992; Shafir, 1994; Shafir, Simonson, & Tversky, 1993; Shafir & Tversky, 1992) showed that facing complex choices systematically alters the selections people make, leading to increased levels of inaction. They propose that people need a reason to justify making an active decision (e.g., placing a gamble or purchasing a vacation). Bundling legislation may increase support for separate policies in part by decreasing the complexity of a complicated choice and thus reducing inaction (in the form of voting not to pass a given piece of legislation). Bundling separate bills could be seen as increasing their complexity because of the inclusion of more component parts. However, bundled legislation of the type we propose is likely simpler to evaluate than separate legislation because in isolation, it may be difficult to evaluate the

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**Table 2**
This table summarizes the different pieces of hypothetical legislation presented to participants in Study 1. Each participant viewed one randomly selected bill for each tradeoff studied (e.g., a participant might view *Single Bill 1* for *Tradeoff 1*, *Combined Bill* for *Tradeoff 2*, *Single Bill 2* for *Tradeoff 3*, and *Bill 1* for *Tradeoff 4*).

| Tradeoff | Single Bill 1 | Single Bill 2 | Combined Bill |
|---|---|---|---|
| 1. Jobs vs. Protected Forest | A bill to establish new park areas in Community *X* where logging would be prohibited, costing the community 100 jobs but preserving 60,000 acres of forest | A bill to eliminate protected park areas in Community *Y*, which would allow logging on 50,000 acres of previously protected forest, destroying that forest but creating 125 new jobs | Part A. Bill 1<br>Part B. Bill 2 |
| 2. Gridlock vs. Fender Benders | A bill to remove a traffic light from a stretch of highway *X* that would reduce the total time spent there by all drivers by a total of 6000 h, resulting in 10 more fender-benders per year | A bill to add a traffic light to a stretch of highway *Y* that would result in 15 fewer fender-benders per year but add 4000 h to the total time spent there by all drivers | Part A. Bill 1<br>Part B. Bill 2 |
| 3. Brownouts vs. Health Complaints | A bill authorizing the construction of a new energy plant in Town A to reduce the number of blackout hours per year by 1000, leading to 10 more pollution-related health complaints annually | A bill authorizing the closure of an existing energy plant in Town B to reduce the number of pollution-related health complaints annually by 12 but increasing the number of blackout hours per year by 800 | Part A. Bill 1<br>Part B. Bill 2 |
| 4. Playground Capacity vs. Diseased Rodents | A bill adding a new playground for 250 children that would bring 250 disease-carrying rodents to the city | A bill destroying an existing playground for 225 children that would reduce the city's disease-carrying rodent population by 300 | Part A. Bill 1<br>Part B. Bill 2 |

importance of a given loss or gain involved in a single tradeoff (Hsee, 2000) (allowing loss aversion to overwhelm a decision maker); by contrast, in bundled legislation, losses cancel out, reducing the complexity of the choice at hand.

Past research on prospect theory, and in particular, on loss aversion suggests that the bundling technique we propose may have the power to improve legislative outcomes by reducing the human tendency to overweight losses. Further, research on choice bracketing, alignability, and reason-based choice suggests additional mechanisms that may enhance the benefits of bundling. The remainder of this paper is devoted to an empirical exploration of the hypothesis that bundling is an effective means of increasing support for policies with costs and benefits.

## Study 1

Study 1 is designed to test the hypothesis that a bundled bill with offsetting losses and gains of the type described in Table 1 will achieve greater support than either of its component bills and will be valued more than the sum of its component parts, contrary to the prediction of standard utility theory.

### *Method*

One hundred and sixty-eight participants were recruited to participate in an hour-long set of studies in a computer lab on a large university campus in the Northeastern United States in exchange for $15. Participants completed our study at computer terminals and then participated in two other, unrelated studies.

During our study, participants read four hypothetical pieces of legislation, each involving a cost-vs.-benefit tradeoff of a different type (e.g., cutting jobs but gaining acres of protected forest). Table 2 summarizes the different pieces of hypothetical legislation included in our study, and the full text of each bill seen by participants is provided in Appendix Part 2.

Four types of hypothetical cost-vs.-benefit tradeoffs were included in this study (see Table 2, Column 1).[1] For a given type of tradeoff (e.g., jobs vs. protected forest), each participant was randomly assigned to see one of two *single* bills pertaining to an individual policy with costs and benefits (*Single Bills 1* or *2* in Table 2) or a *combined* bill presenting both of the single bills' policies in a two-part bundle. The combined legislation was simply a presentation of the individual bills as Parts A and B of a longer proposed law. To test our hypothesis, our study was designed so that for each type of tradeoff, the losses in a given single bill were offset by greater gains in its paired bill (as outlined in Table 1).

The order in which subjects viewed the four bills in this study was randomized both in terms of the type of tradeoff viewed (*Tradeoff 1,2,3* or *4*) and the type of bill considered (*Single Bills 1 and 2*, or *Combined Bill*).

After viewing the details of a given bill, participants were asked if they would vote for or against the policy in question. Participants who had voted for/(against) a bill were then asked how many hours they would want their legislator to devote to supporting/(opposing) the passage of the bill – a measure of the strength of their support for the legislation. Strength of support is tabulated as the number of hours a participant would want his or her legislator to spend supporting a bill's passage, with hours spent in opposition taking on negative values. In other words, if one participant voted for a bill and indicated she would want her legislator to spend 3 h supporting its passage, her strength of support in hours would be classified as 3. If another participant voted against the bill and indicated she would want her legislator to spend 2 h opposing its passage, her strength of support in hours would be classified as −2. This strength of support measure is a proxy for how much an individual values a given outcome, adapting the traditional economic measure of "willingness to pay."

### Results and discussion

For each of the four tradeoffs studied, we find that support for a combined bill is greater than support for either of its separate, component bills (see Fig. 1). We conduct an overall analysis of the effect of bundling across the tradeoffs studied by running a logistic regression to predict a given subject's vote (yes = 1, no = 0) on a given bill as a function of whether the bill was part of a bundle, clustering standard errors by subject to account for repeated measures. We find that combined bills are, on average, significantly more popular with subjects than single

[1] Only 116 participants responded to Tradeoffs 2 and 4.

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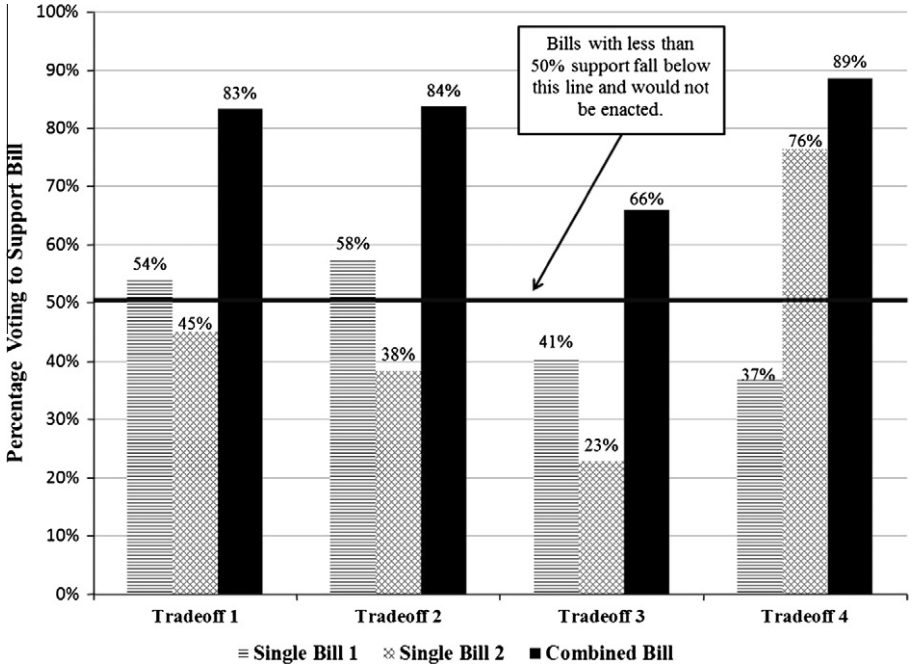


**Fig. 1.** Outcomes of votes on single and combined legislation based on tradeoffs illustrated in Table 2. Support for a combined bill is always greater than support for either of its separate, component bills.

bills ($\beta_{combined} = 1.53$; $p < .001$; Pseudo $R^2 = .0812$).[2] This finding substantiates our contention that policy bundling may be an effective tool for policymakers hoping to pass legislation that contains obvious, salient, and unavoidable costs that could prevent it from passing if evaluated separately. As Fig. 1 illustrates, policy bundling has the systematic ability to transform two relatively unpopular pieces of legislation into a wildly popular and passable combination – a practically valuable feat and one that neoclassical economic theory would not predict.

Further, by measuring the strength of support for each bill, we are able to determine whether this finding is due to voters favoring one policy more strongly than they oppose the other policy in a bundle. Perhaps their enthusiasm about one component bill overwhelms their dislike for the other, thus driving their support for a joint bill when they would not support one of its component bills. If such compromise were responsible for our findings, the average strength of support in legislator hours for each combined bill should equal the net strength of support in hours for the sum of its component bills. However, we find that in every one of the four policy tradeoffs studied, policy bundling is not effective due to compromise. For each tradeoff, the average number of hours a participant would want his or her legislator to devote to supporting two separate bills sums to fewer hours than the average number of hours a participant would want his or her legislator to devote to supporting the combined bill (see Table 3). To test whether this phenomenon is significant, we conduct an ordinary least squares (OLS) regression to predict a given subject's strength of support for a given bill (in hours) as a function of whether the bill was part of a bundle (*Combined Bill*), *Single Bill 1*, or *Single Bill 2* (constant suppressed), clustering standard errors by subject. We then conduct a linear hypothesis test to determine whether combined bills are valued more than the sum of their component parts (null: $\beta_{combined_bill} = \beta_{single_bill_a} + \beta_{single_bill_b}$) and find that, on average, people would want their legislators to devote 57.38 more hours to supporting combined bills than working to support those combined bills' two component single bills ($F(1, 167) = 9.24$; $p < .01$).[3,4,5] We therefore conclude that our results are due to a psychological difference in the way people evaluate (a) individual

[2] We can also examine this effect for each specific tradeoff by running a regression to predict each subject's vote on each bill with 12 dummy variable predictors for each of the 12 bills, again clustering standard errors by subject. We can then conduct linear hypothesis tests to determine whether the approval for a given single bill is equal to that for its matched combined bill. For Tradeoff 1, both single bills are significantly less popular than the *Combined Bill* ($p < .01$ in both cases). For Tradeoff 2, both single bills are significantly less popular than the *Combined Bill* ($p < .05$ in both cases). For Tradeoff 3, both single bills are significantly less popular than the *Combined Bill* ($p < .01$ in both cases). For Tradeoff 4, *Single Bill 1* is significantly less popular than the *Combined Bill*, but *Single Bill 2* is insignificantly less popular than the *Combined Bill* ($p = 0.16$), probably due to a ceiling effect (as it would be quite difficult to achieve significantly greater popularity than the 76% achieved by *Single Bill 2*).

[3] We can examine this effect for each specific tradeoff studied as well by running a regression to predict each subject's strength of support for each bill with 12 dummy variable predictors for each of the 12 bills, again clustering standard errors by subject. We can then conduct linear hypothesis tests to determine whether the summed strength of support for two single bills is equal to the support for their matched combined bill. For Tradeoff 1, the summed support for *Single Bills 1* and *2* is significantly less than the support for the *Combined Bill* ($F(1, 167) = 9.40$; $p < .01$). For Tradeoff 2, the summed support for *Single Bills 1* and *2* is marginally significantly less than the support for the *Combined Bill* ($F(1, 167) = 2.91$; $p < 0.10$). For Tradeoff 3, the summed support for *Single Bills 1* and *2* is significantly less than the support for the *Combined Bill* ($F(1, 167) = 6.92$; $p < .01$). For Tradeoff 4, the summed support for *Single Bills 1* and *2* is marginally significantly less than the support for the *Combined Bill* ($F(1, 167) = 3.37$; $p < 0.10$).

[4] Note that if we transform the outcome variable in this regression such that we examine the log of the absolute value of 1 + strength of support (and then negate this term for bills receiving negative support), we observe the same effect ($p < .0001$), so our results are not due to a skewed distribution of this outcome variable (untransformed mean = −2.58, std. dev. = 114.87, skewness = −10.06).

[5] Three other measures of strength of support for each bill were also collected, each involving a participant's willingness to commit his/her own resources to supporting or opposing a given piece of legislation (hours, dollars, or miles walked). These additional measures exhibit patterns similar to those presented in Table 3 pertaining to hours a participant would want his/her legislator to spend supporting or opposing a bill's passage. However, nearly half of participants were unwilling to commit any of their own resources to supporting or opposing legislation, leading to a reduction in the sensitivity of these three measures (due to high variance in the strength of support responses). Meanwhile, other participants committed more resources than they possessed; the variance in responses in donation dollars ranged from $0 to $10 million—which we assume to be outside of a truthful range of willingness to pay. Appendix Table A1 presents detailed statistics for all strength of support data collected.

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**Table 3**
Average willingness to pay (WTP) in legislator hours for single and combined legislation based on tradeoffs illustrated in Table 2. The WTP for a combined bill is always greater than the sum of the WTP for its two separate, component bills. Standard deviations are in parentheses.

| | Tradeoff 1 | | Tradeoff 2 | | Tradeoff 3 | | Tradeoff 4 | |
|---|---|---|---|---|---|---|---|---|
| | Mean | *N* | Mean | *N* | Mean | *N* | Mean | *N* |
| Bill 1 | 1 (65) | 51 | −49 (318) | 40 | −10 (51) | 64 | −38 (163) | 38 |
| Bill 2 | −31 (98) | 63 | −8 (57) | 39 | −17 (54) | 48 | 14 (25) | 34 |
| Combined Bill | 24 (51) | 54 | 31 (53) | 37 | 21 (113) | 56 | 26 (35) | 44 |

bills with salient costs vs. (b) combined legislation that relies on our bundling technique (see Table 1). Standard utility theory cannot explain why combined bills are valued more than the sum of their parts.

## Study 2

While the predictions tested and supported by Study 1 were motivated by the hypothesis that the effects of loss aversion on policy decisions can be reduced through a particular type of bundling, Study 1's design does not allow us to evaluate the mechanism leading to increased support for bundled policies. To determine whether, as predicted, a reduction in the salience of losses in bundled legislation is responsible for the higher levels of support we observe for bundled policies relative to their component policies, we conducted a second study. In Study 2, we investigate the reasoning that leads people to support or oppose different pieces of legislation.

### *Method*

Three hundred fourteen participants were recruited to participate in an hour-long set of studies in a computer lab on a large university campus in the Mid-Atlantic region of the United States in exchange for $10. Participants completed our study at computer terminals and then participated in a series of other, unrelated studies.

Each participant was presented with a single, hypothetical piece of legislation from Study 1 involving a tradeoff between jobs and acres of protected forest (see Table 2, Tradeoff 1). They were randomly assigned to view either *Single Bill 1* ($N = 124$), *Single Bill 2* ($N = 115$), or the *Combined Bill* ($N = 75$).

Participants were first asked if they supported the bill in question. Then they were asked to "write a paragraph describing [their] thought process as [they] approached the decision and the reasons [they] came to [their] conclusion."

### Results and discussion

As in Study 1, we find that support for a combined bill is significantly greater than support for its separate, component bills (two-sample test of proportions, $p > .001$). Eighty-seven percent of participants indicated they would vote for the *Combined Bill*, a considerably greater show of support than that achieved independently by either *Single Bill 1* (56%) or *Single Bill 2* (45%).

Two research assistants who were blind to our hypotheses and experimental conditions were trained to code participants' reported thought processes. Coders were asked to answer two questions: (1) Does the free response make any mention of losses/costs (or any synonym) (y/n)? and (2) Does the free response make any mention of benefits/gains (or any synonym) (y/n)? An agreement rate of 75% (kappa = 0.51, $p < .01$) was achieved for coding losses/costs, and an agreement rate of 72% (kappa = 0.45, $p < .01$) was achieved for coding benefits/gains. Thoughts of losses/(gains) were coded as present (code = 1) or absent (code = 0) when both coders agreed, and in cases of disagreement, the codes were averaged (code = 0.5).

As predicted, we found that significantly fewer participants were coded as thinking about losses when evaluating the *Combined Bill* (31%) than when evaluating *Bill 1* (66%; two sample proportion test: $p < .01$) or *Bill 2* (56%; two sample proportion test: $p < .01$). In addition, significantly more participants were coded as thinking about gains when evaluating the *Combined Bill* (86%) than when evaluating *Bill 1* (44%; two sample proportion test: $p < .01$) or *Bill 2* (62%; two sample proportion test: $p < .01$). These results support our prediction that policy bundling reduces the salience of losses in a piece of legislation's component parts and heightens the salience of gains.

To examine whether mentioning gains or losses mediated the effect of seeing a combined bill on a participant's likelihood of approving the bill, we relied on the hierarchical logistic regression procedures outlined by MacKinnon and Dwyer (1993). Controlling for whether a participant saw a combined bill as opposed to a separate bill, we found that mentions of gains predicted a higher likelihood of approving a bill ($\beta_{gains} = 0.83$, $p < .001$) and mentions of losses predicted a lower likelihood of approval ($\beta_{losses} = -0.59$, $p < .05$). To test for mediation, we constructed bias-corrected confidence intervals for the size of the indirect effect of mentioning gains or losses on bill approval based on 500 random samples with replacement from the full sample (Stine, 1989), and a bootstrap analysis showed that the 95% bias-corrected confidence interval excluded zero. This suggests a significant indirect effect of mentions of gains or losses on bill approval (Baron & Kenny, 1986; MacKinnon, Fairchild, & Fritz, 2007; Shrout & Bolger, 2002). In other words, bundled bills were more likely to be approved than single component bills partly because of the reduced salience of losses and increased salience of gains when bills were viewed in bundled form.

## Study 3

Studies 1 and 2 establish that bundling bills with offsetting costs and benefits in matched domains increases support for legislation by reducing the effects of loss aversion. However, an important remaining question is whether this bundling concept could be applied more broadly such that similar but imperfect substitutes could be offset in bundled legislation. In Study 3, we investigate the possibility that the policy-bundling technique introduced in this paper can be effective when it involves two separate bills with offsetting losses that are imperfect substitutes (e.g., administrative jobs vs. infrastructure jobs). We also study domains relevant to current events to highlight the relevance of our work to recent debates about issues such as how to stimulate the economy by passing legislation that generates jobs while simultaneously slashing budgets to address tax shortfalls (Herdt, 2010).

### *Method*

Eighty-seven participants were recruited to participate in an hour-long set of studies in a computer lab on a large university campus in the Mid-Atlantic United States in exchange for $10.

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**Table 4**
This table summarizes the different pieces of hypothetical legislation presented to participants in Study 3. Each participant viewed one randomly selected bill for each tradeoff studied (e.g., a participant might view *Bill 1* for Tradeoff 1, *Bill 2* for Tradeoff 2, and *Combined Bill* for Tradeoff 3).

| Tradeoff | Single Bill 1 | Single Bill 2 | Combined Bill |
|---|---|---|---|
| 5. Taxes vs. Deaths | A bill reducing the budget for restaurant inspections and thus taxes by $35 million but increasing the expected number of deaths from sanitation issues by 20 | A bill increasing the budget for flu shots and thus taxes by $33 million but reducing the expected number of deaths from flu by 22 | Part A. Bill 1<br>Part B. Bill 2 |
| 6. Taxes vs. Injuries | A bill increasing the police presence to reduce petty crime injuries by 90 but increasing taxes by $225 per person in the coming year | A bill reducing the frequency of fire department inspections will lower taxes by $250 per person in the coming year but will increase minor injuries from fires by 80 | Part A. Bill 1<br>Part B. Bill 2 |
| 7. Taxes vs. Jobs | A bill to fund new infrastructure projects will create 30,000 jobs but will increase the budget deficit and resulting tax burden by $1 billion dollars | A bill to eliminate state government administration jobs will eliminate 25,000 jobs but will reduce the budget deficit and resulting tax burden by $1.2 billion dollars | Part A. Bill 1<br>Part B. Bill 2 |

Participants completed our study at computer terminals after participating in a series of other, unrelated studies.

Participants read three hypothetical pieces of legislation in this study. Table 4 summarizes the different pieces of hypothetical legislation included in our study, and the full text of each bill seen by participants is provided in Appendix Part 3. After examining each hypothetical piece of legislation, participants were asked if they would vote for or against the bill in question.

Three types of hypothetical cost-vs.-benefit tradeoffs were included in this study (see Table 4, Column 1). As in Study 1, for a given type of tradeoff, each study participant was randomly assigned to see one of two *single* bills pertaining to an individual policy with costs and benefits (Bills 1 or 2 in Table 4) or a *combined* bill presenting both of the single bills' policies in a two-part bundle. To test our hypothesis, our study was designed so that for each type of tradeoff, the losses in a given single bill were offset by greater gains in its paired bill (as outlined in Table 1). The bills in this study differ from those in previous studies, as the costs and benefits in paired bills fall into the same category (e.g., government spending, jobs, etc.) but spring from different sources (e.g., spending on restaurant inspections vs. flu vaccinations).

## Results and discussion

As illustrated in Fig. 2, in each of the three policy domains studied, we find that support for a combined bill is greater than support for either of its separate, component bills. As in Study 1, we conduct an overall analysis of the effect of bundling across the tradeoffs studied by running a logistic regression to predict a given subject's vote (yes = 1, no = 0) on a given bill as a function of whether the bill was part of a bundle, clustering standard errors by subject to account for repeated measures. We find that combined bills are, on average, significantly more popular with participants than single bills ($\beta_{\text{combined}} = 1.71$; $p < .001$; Pseudo $R^2 = .10$).[6]

These findings confirm that even when the costs and benefits in paired bills are of the same type but differ in their source (e.g., injuries from small fires vs. petty crime), the policy-bundling technique proposed in this paper has a considerable impact. The bundles presented in Study 3 contain the types of costs and benefits that legislators are struggling to manage in budgets and stimulus packages that have been proposed as a result of the current economic downturn, highlighting the relevance and value of the policy-bundling technique described in this paper.

## General discussion

We believe the policy-bundling method presented in this paper has the potential to help citizens and policymakers pass legislation that has necessary costs but net benefits. Single pieces of legislation often fail to gain enough support for enactment because they are narrowly bracketed, thus preventing legislators from overcoming loss aversion. We hope that the bundling method we have proposed will help legislators move beyond the reluctance to support wise legislation that loss aversion can induce.

We believe that our bundling strategy is simple, straightforward, and relevant to real-world policy making. We also believe that many legislative bills that provide net positive utility to society fail to pass and could pass with the use of this technique. Yet, one could question the viability of finding perfectly matched bills like those used in Studies 1 and 2. Thus, in Study 3, we show that the strategy is robust to imperfectly matched bills - and this is where our strategy is likely to find the most use. There are many contexts in which jobs and the environment are in opposition, where safety and cost are in opposition, and so on. By searching for seemingly efficient trade-offs in similar domains, we believe that many bundles may present themselves that have the potential to make legislators more supportive and society better off.

There is some evidence that versions of the idea we propose are already helping some legislation gain support, whether or not the designs have been intentional. For example, in 2010, Colorado Governor Bill Ritter signed a bundle of bills designed to increase public safety through the rehabilitation of criminals. The legislation combined both spending cuts and spending increases to fight crime, depending on the type of crime. By lessening punishment for low-level drug offenders, legislative estimates place net savings from the bill at more than $91 million over 5 years (Fender, 2010). These funds may be used for treatment programs or more severe sentences for high-level drug offenders. Some critics opposed the reduced net spending for criminal punishment out of concern for public safety, yet many aspects of the bundled bills actually served to increase public safety by increasing penalties for more severe crimes, such as drug distribution (Colorado HB 1352, 2010). Thus, the legislation can be seen as bundling spending cuts (gains) with spending increases (losses) in a way that yields a net government spending cut, while also bundling tougher penalties for serious

[6] We can also examine this effect for each specific tradeoff studied by running a regression to predict each subject's vote on each bill with nine dummy variable predictors for each of the nine bills, again clustering standard errors by subject. We can then conduct linear hypothesis tests to determine whether the approval for a given single bill is equal to that for its matched combined bill. For Tradeoff 1, both single bills are significantly less popular than the *Combined Bill* ($p < .011$ in both cases). For Tradeoff 2, both single bills are marginally significantly less popular than the *Combined Bill* ($p < .051$ in both cases). For Tradeoff 3, both single bills are significantly less popular than the *Combined Bill* ($p < .05$ in both cases).

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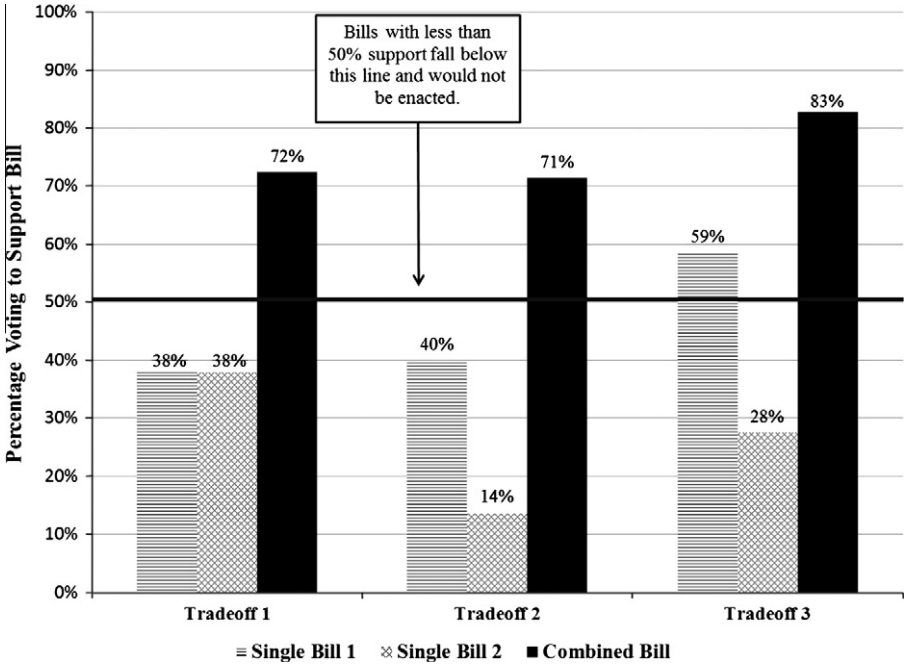


**Fig. 2.** Outcomes of votes on single and combined legislation based on tradeoffs illustrated in Table 4. The support for a combined bill is always greater than the support for either of its separate, component bills.

drug crimes (gains) with reduced penalties for minor drug offenses (losses), ultimately yielding a net public safety gain.

At the Federal level, the Health Care and Education Affordability Reconciliation Act of 2010 bundled a federal student loan bill with major health care legislation (HR 4872, 2010). The health care component, which will cover 21 million uninsured Americans and decrease premiums for many more, is expected to increase traffic to hospitals and thus to create jobs and increase revenues in the industry. The student loan bill, by eliminating banks and private lenders as student loan intermediaries, will force job cuts and eliminate one source of the banking industry's revenue. However, the potential loss of jobs in the banking industry was alleviated by the anticipation of more jobs that will be created by the health care overhaul.

Many state and federal budget proposals involve similar bundled costs and benefits each year. For instance, state budgets often cut spending in one domain that results in harm to public safety (e.g., cuts to fire departments) while increasing spending in other domains aimed at improving public safety (e.g., added flu response resources). For example, the 2009–2011 Wisconsin state budget cut some Medicaid funding to save taxpayer dollars while simultaneously increasing other Medicaid funding by greater amounts through federal subsidies that were less costly to the state's taxpayers (Peacock, 2009). We argue that legislators could engage in more strategic policy bundling to offset loss aversion, highlight the implicit and inefficient ways in which we allocate resources to save lives (Slovic, 2000), and support other important public goals. Contributing to the creation of greater efficiency is the core goal of the current paper.

While this paper focuses on the benefits of policy bundling that may be achieved by policymakers in political arenas, it is important to note that policy bundling need not be applied narrowly to domains in which ballots are cast. Our bundling technique could also be applied to a wide range of settings in which decision makers are seeking to gain support for wise policies involving costs and benefits. For instance, a manager hoping to improve her organization's bottom line by cutting the number of advertisements run in one expensive forum, and who also hopes to increase advertising in a cheaper and more effective domain, might earn more support from colleagues for both policies by proposing them simultaneously.

Although we do not pursue the question in this paper, it would be interesting to determine whether bundling is an effective technique when it cancels losses in only one domain and merely reduces them in another. Such a bundle would only reduce one of two sources of loss aversion, so our prediction is that it would be effective but less powerful than the current form of bundling proposed. Future research could investigate this question. Another interesting question for future research would be to examine whether bundling bills with entirely different types of costs and benefits (e.g., safety increases at the cost of tax hikes combined with job increases at the cost of reduced park acreage) might lead to any benefits. While alignable losses would not cancel out, it is possible that such combinations could be more attractive than their component parts if people bracketed gains and losses very broadly.

Another potential extension of this work could focus on the effectiveness of policy bundling when individual policies with offsetting losses are merely *presented* jointly, rather than separately, without necessarily requiring joint voting on the combined bundle of bills. We tested this hypothesis in an additional study using Tradeoff 3 from Study 1. In addition to including the original three conditions from Study 1 (*Single Bills 1, 2*, and *Combined Bill*), we included a "joint evaluation" condition in which subjects viewed both *Single Bills 1* and *2* together and then had the opportunity to vote for or against each of these two bills. We found that much of the benefit of bundling could also be achieved simply through joint evaluation. Bundled bills received insignificantly more support (53% support on average, $N = 98$) than jointly evaluated bills, which received significantly more support (49% support on average, $N = 208$) than single bills (36% support on average, $N = 206$; two-tailed two-sample test of proportions comparing support for bills under joint vs. separate evaluation, $p = .01$). These results suggest that the effectiveness of our bundling technique is primarily due to the joint presentation and evaluation of bills. Much of the benefit of bundling could therefore presumably be achieved simply

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**Table A1**
Average willingness to pay (WTP) in various alternative metrics from Study 1 for single and combined legislation based on tradeoffs illustrated in Table 2. WTP for a combined bill is greater than the sum of the WTP for its two separate, component bills in 11 of 12 cases studied, although only significantly so for the "hours fundraising" WTP measure (see footnote 5 for a discussion). Standard deviations are in parentheses.

| WTP | | Tradeoff 1 | | Trade off 2 | | Trade off 3 | | Tradeoff 4 | |
|---|---|---|---|---|---|---|---|---|---|
| Measure | | Mean | *N* | Mean | *N* | Mean | *N* | Mean | *N* |
| Donation dollars | Bill 1 | 6792 (43,954) | 51 | −390 (1529) | 40 | −241 (9714) | 64 | −12 (1591) | 38 |
| | Bill 2 | −84,158 (47,821) | 63 | −8 (1569) | 39 | −1082 (11,336) | 48 | −2974 (1662) | 34 |
| | Combined Bill | −18,490 (45,553) | 54 | 2843 (1591) | 37 | −18,167 (10,479) | 56 | 376 (1456) | 44 |
| *Hours fundraising* | Bill 1 | −3(3) | 51 | −11(7) | 40 | −4(2) | 64 | −22 (13) | 38 |
| | Bill 2 | −7(3) | 63 | −2(7) | 39 | −2(2) | 48 | 6(13) | 34 |
| | Combined Bill | 3(3) | 54 | 14(7) | 37 | 0(2) | 56 | −1 (12) | 44 |
| *Walkathon* | Bill 1 | 1(97) | 51 | −1 (12) | 40 | −4 (10) | 64 | −55 (30) | 38 |
| | Bill 2 | −194 (107) | 63 | −22 (12) | 39 | −2 (11) | 48 | 4(32) | 34 |
| | Combined Bill | 4 (105) | 54 | 4(12) | 37 | 18 (10) | 56 | 4(28) | 44 |

through joint presentation and joint evaluation. In a complex, real-world voting environment, however, it may be quite difficult to ensure that two offsetting bills can be voted upon jointly without any interruption unless they are part of a single piece of legislation. That said, as joint presentation and evaluation appear to achieve the same sorts of benefits as bundling, policymakers may be able to reap the benefits of bundling without incurring undue logistical or political costs. Further research on the promise and pitfalls of this joint presentation methodology may be of value.

It is important to highlight one potential alternative explanation for our findings besides those previously discussed. It is possible that bills with two parts are simply deemed more attractive than bills with a single part due to a "more is better" heuristic. Given the analysis presented in Study 2 demonstrating that our findings are mediated by attention to losses and gains in the evaluation process, this explanation alone for our results seems somewhat implausible. However, we cannot rule it out as at least a partial explanation for the bundling results presented in this paper.

It is also important to note that while this paper focuses on the potential benefits of policy bundling, this technique could potentially cause harm. For example, if policy bundling could be used to increase support for two policies that have the combined effect of killing 90 people to save the lives of 100, it is not clear this would be a beneficial outcome for society. When those who would gain from a policy differ from those who would lose from it, distributive issues must of course be considered, and the benefits that can be gained from our bundling technique do not necessarily apply to policies involving infringements of deontological constraints. It is our hope that the technique described in this paper will be used to improve societal outcomes rather than to generate harmful ones.

Making wise tradeoffs between losses and gains has been core to the development of the negotiation literature over the last 30 years (Malhotra & Bazerman, 2007; Thompson, 2009). Negotiation researchers have highlighted the empirical result that negotiators frequently fail to find readily available tradeoffs that require each party to suffer a small loss in return for a larger gain, a phenomenon that has been labeled the "mythical fixed-pie" (Bazerman, 1993; Bazerman, Baron, & Shonk, 2001). We see this failure to make wise tradeoffs as mirroring the policy failures that we highlight in the current paper.

Previous research highlighting policy applications of loss aversion has proven extremely valuable. A knowledge of people's tendency to view any deviation from the status quo as an aversive loss (Samuelson & Zeckhauser, 1988) has helped policymakers understand the enormous implications of defaults on important issues such as organ donation (Johnson & Goldstein, 2004) and 401k participation (Madrian & Shea, 2001). We believe that knowledge of a strategy for overcoming loss aversion through bundling could similarly help policymakers pass better legislation and managers garner greater support for wise proposals.

While the behavioral decision research literature has shown the difficulty of fully de-biasing human judgment (see Milkman, Chugh, & Bazerman, 2009 for a review), we can design decision-making contexts in ways that lead to wiser choices (Thaler & Sunstein, 2008). By using our bundling strategy, choice architects may be better able to overcome the pitfalls of loss aversion and, in turn, affect more positive change in voting booths, legislatures, and board rooms.

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## Appendix A

See Table A1.

## Appendix B. Supplementary material

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.obhdp.2011.07.001.

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