

**Enhanced Active Choice: A New Method to Motivate Behavior Change**

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## **Enhanced Active Choice: A New Method to Motivate Behavior Change**

### **Abstract**

High rates of medication non-adherence have significant public health and economic consequences. In other contexts such as savings behavior, opt-out policies, in which the alternative preferred by the policy maker is made the default, have gotten great traction but may not be feasible in health care settings. After reviewing previous applications, we present a series of studies, including two field experiments, that test the effectiveness of an alternative, ‘active choice’ policy in which there is no default, but decision makers are required to make a choice (Carroll et al., 2009; Spital, 1993; 1995). In addition, we propose and test a modified version of active choice, that we call ‘enhanced active choice’ that favors one alternative by highlighting losses incumbent in the in the non-preferred alternative. We recommend Enhanced Active Choice as a complement to automatic enrollment or when automatic enrollment is infeasible or unethical.

## Introduction

### *Opt-out: The Power of Defaults*

Among the tools of ‘choice architecture’ (Thaler & Sunstein, 2008) derived from behavioral economics, certainly the best known and most successfully employed is defaults. Applying Samuelson and Zeckhauser’s (1988) seminal research on the ‘status-quo bias’ to public policy, policies that change defaults have been shown to have a major impact on a wide range of important decisions. Enrollment in tax-favored savings plans is 50% higher when employees are automatically enrolled compared to when they opt-in (Madrian & Shea, 2001; Choi et al., 2002; 2003; 2004). Organ donation rates are over four times higher when consent to donate is assumed than when it needs to be given explicitly (Johnson & Goldstein, 2003). Food choices are healthier when the default is lower calorie ingredients (Downs, Loewenstein, & Wisdom, 2009). And marketers have used enrollment defaults to influence car-related decisions (Johnson et al. 1993; Park, Yun, & MacInnis, 2000) or to persuade consumers to participate in more benign decisions such as receiving e-mail marketing (Johnson, Bellman, & Lohse, 2002).

‘Opt-out’ policies that automatically assign people to carefully selected default choices are effective for a number of overlapping reasons. *Loss aversion* encourages people to stick with the default because moving away from the default typically involves losses and gains, and losses receive disproportionate weight (Johnson & Goldstein, 2003; Park, Jun, & MacInnis, 2000; Samuelson & Zeckhauser, 1988). The effect of loss aversion is further exacerbated by *present-bias* – the inordinate weight people place on costs and benefits that are immediate (Akerlof, 1982; O’Donoghue & Rabin, 1999a). Deviating from the default often incurs immediate, if small, costs that are compensated for only by long-term benefits which, according to present-bias, are severely discounted.

*Procrastination* also works in favor of opt-out policies, again because deviating from the default often involves positive action, which people procrastinate in taking. People procrastinate for a variety of reasons including present-bias (see, e.g., Akerlof, 1982; O’Donoghue & Rabin, 1999b), as a way of coping with anxiety and fear (Luce, 1998), and in part because they are unrealistically optimistic that they will have more time in the future to make a better informed decision (see incentives for procrastinators, Ariely & Wertenbroch, 2002). Procrastination is in part a manifestation of the age-old adage that the best (in this case, making an informed decision in the future) is the enemy of the good (making an adequate, if not perfectly optimal, choice now) (Mukhopadhyay & Johar, 2005; Zauberman & Lynch, 2005). Finally, opt-out policies exert such a strong influence on behavior in part because people assume that defaults have been selected for a reason – i.e., that defaults constitute implicit recommendations of specific courses of action (McKenzie, Liersch, & Finkelstein, 2006).

Beyond the fact that they are effective in changing behavior, defaults have the advantage over stronger paternalistic interventions of being non-coercive. Opt-out is a prime example of an ‘asymmetrically paternalistic’ policy (Camerer et al., 2003) that can be used to steer people who are behaving mindlessly in beneficial directions without constraining the choices of those who know that they prefer a different option and take the trouble to obtain it.

### *Limitations of Opt-out*

Yet, for all their advantages, opt-out policies have diverse and severe limitations, especially in some settings. First and foremost, because opt-out policies yield decisions through the inaction of the decision maker, they are less likely to engender the kind of committed follow-up that is often useful when it comes to implementing the decision. Someone who ‘agrees’ to get

a flu shot simply because they didn't make the effort to express a desire not to get one is unlikely to go to the same trouble to actually get it as someone who has affirmatively expressed a desire to get one. This effect may go beyond pure self-selection; the act of affirmatively making a decision may well increase a decision maker's satisfaction (Botti & McGill, 2006) and commitment (Cioffi & Garner, 1996) above and beyond what the same decision maker would exhibit if the decision were passive. Likewise, family members of an elderly person facing the option of going on life support may be more likely to honor an affirmative decision by that person to eschew heroic measures than they would be to honor a decision that arose simply because the person failed to affirmatively state that they wanted such measures (Spital, 1993; 1995; 1996). This is obviously much more of an issue in contexts like advance directives, in which people have to infer the preferences of others, or in contexts which require ongoing engagement than for flu shots, which just require a one-time decision.

Second, opt-out 'choices' in many situations are less likely to reflect decision makers' true preferences than will more active choices (Payne, Bettman, & Johnson, 1993). Opt-out is likely to be effective in situations in which there is a single optimal course of action, that most people don't take, and that policy-makers are able to identify and favor by making the default. However, when different options are best for different people, or when policy-makers cannot be relied upon to make the best option the default, then opt-out will be much less beneficial and even potentially destructive. For example, there is growing evidence that the shared optimum inherent in an automatic 401(k) enrollment plan may be inappropriate (Carroll et al., 2009) or unsustainable (Lusardi & Mitchell, 2007a) for some people.

Third, in some situations, passive choices are more likely to result in waste or inefficiency. If a person's failure to affirmatively state that they don't want to recycle is taken as

an intention to recycle, the recycling truck may end up making a lot of wasted trips to pick up recyclables that never materialize. Similarly, kids at schools in which the default is changed to include fruits and vegetables may discard the fruits and vegetables rather than consuming them.

Fourth, opt-out choices are often legally or ethically unacceptable. For instance, in a retirement saving context, we might want employees to sign up for "auto escalation" to boost their contributions by a percentage point or so a year or sign up for a supplementary retirement account (Thaler & Benartzi, 2004; Lusardi & Keller, 2008), but it is currently illegal to auto-enroll employees in auto escalation plans. In addition many employees would consider it unethical if employers offered something like an opt-out ideal weight plan in their benefits package.

Fifth, opt-out policies can be counterproductive if those who implement them view them as a substitute for other, more substantive, interventions, such as educational programs that give people the information they need to make an informed choice. Some employers who adopt 401(k) automatic enrollment, for example, may believe they no longer have to provide financial literacy and investor education to employees. Inaccessibility of financial seminars may lower employee motivation to learn about how their earnings are distributed and whether they have taken advantages of other benefits offered by employers.

Employers may not adopt automatic enrollment because they don't want to assume the burden of responsibility for planning for their employees. They may fear, to some extent rightfully, that some employees may interpret defaults as implicit advice (McKenzie, Liersch & Finkelstein, 2006) and may be upset with their employer during market downturns. Workers who invest in a 401(k) without lifting a finger are unlikely to spend much time looking into whether they're saving enough, or even too much. Reflective of the view that some employees

may not understand the pros and cons of tax-protected accounts, 10% of 401(k) plan loans result in defaults and an alarming 80% of employees default on an outstanding plan loan when they leave the firm (Lu, Michell, & Utkus, 2010).

### *Active Choice: Avoiding the Problems Associated with Opt-Out*

Three studies, two on organ donation (Spital, 1993; 1995) and one on retirement planning (Carroll et al., 2009) attempt to achieve the same basic goal as opt-out – of ensuring that people who would benefit from an intervention, receive it – without the disadvantages of opt-out. These studies have identified and tested an alternative approach that requires individuals to affirmatively choose between options. Unlike opt-out or opt-in, the “forced choice” approach does not have a default; indeed, the key element of the policy is to force decision-makers to make an explicit choice.

Instead of waiting for people to opt-in, Spital (1993; 1995) found support in public opinion surveys for the idea of forcing people to choose whether they want to donate their organs. Sixty three percent of a random sample of 1000 adults in the United States said they would support mandatory choice (Spital, 1993). In a subsequent national survey, of the 30% of those who had previously decided to donate, 95% said they would still do so under mandated choice (Spital, 1995). Spital recommends using a mandatory plan wherein all adults would be required to record their wishes about organ donation and those wishes would be considered binding (Spital 1996).

In an observational study, Carroll and colleagues (2009) measured the impact on savings plan enrollment in a firm that required all new employees to explicitly choose between enrolling and not enrolling in a 401(k) plan. All employees had to do was return a form indicating their

choice along with their medical benefit enrollments. Employees were sent multiple reminders and given 30 days to return the form. Only 5% of the employees did not return the form. The (unadvertised) default was their status quo. The language (I want to enroll vs. I don't want to enroll) was deliberately designed to not advantage any one option (Carroll et al., 2009). The result was a 28% increase in enrollment in the "Active Decision" condition compared to when employees opted-in. While not as effective as the 50% increase in 401(k) enrollment during automatic enrollment (Madrian & Shea, 2001), the Carroll et al. (2009) article demonstrates that forcing respondents to choose one alternative may overcome some of the obstacles of automatic enrollment while performing better than opt-in.

Building on the research by Carroll et al. (2009) and Spital (1993; 1995) we advance the concept of forced choice by testing four important enhancements. First, while the Carroll et al. study was a kind of observational field quasi-study and the Spital studies were surveys, we conduct randomized studies, both in the lab and in the field, to compare forced decisions (which we henceforth refer to as "Active Choice") against alternative approaches; most notably opt-in. Taking advantage of the opportunities afforded by a controlled study, we control for additional enrollment materials such as one-on-one coaching from human resources and other enrollment prompts such as reminders.

Second, we provide conceptual and empirical evidence for the cognitive and decision processes that make Active Choice effective. Prior research has underscored the association between the act of choosing and feelings of cognitive dissonance (Festinger, 1957) and regret (Ordóñez & Connolly, 2000; Zeelenberg, van Dijk, & Manstead, 2000). Cognitive dissonance and regret is likely to be lower among people who are automatically enrolled because defaults create effective deflection of cost considerations. Accordingly, we predict greater loss aversion

for the new opportunity expressed as a forced choice than as a default.

Third, we attempt to improve the effectiveness of Active Choice in situations in which policy-makers believe that one option is generally superior. The Carroll et al. (2009) study cited earlier demonstrates that forcing respondents to choose may overcome some of the obstacles of automatic enrollment while performing better than an opt-in default. However, little apparent thought went into the way that the two choices -- “I want to enroll in a 401(k) plan” and “I don’t want to enroll in a 401 (k) plan” – we framed. In this paper, we examine a modified approach that we call ‘Enhanced Active Choice’ that advantages the option preferred by the communicator by highlighting losses incumbent in the non-preferred alternative. Given the choices examined in the paper by Carroll et al. (2009), Enhanced Active Choice might reframe the alternatives as a choice between: “I want to enroll in a 401(k) plan and take advantage of the employer match” versus “I don’t want to enroll in a 401(k) plan and don’t want to take advantage of the employer match.”

Although it may appear obvious, reminding people of what they will lose if they opt for the non-preferred alternative can have a powerful impact on choice because decision makers are unlikely to seek out information about the costs of remaining with the status quo without prompts (Thaler & Sunstein, 2008), especially if such thoughts evoke negative emotions like anxiety and regret (Luce, 1998; Schuman & Presser, 1977). We believe dislike for the non-preferred alternative will be more marked when the costs of non-compliance are highlighted in the choice format.

In sum, our main hypotheses are (H1) that Active Choice (‘unenanced’ or basic and ‘enhanced’) will result in more compliance than opt-in non-enrollment defaults, and (H2) that Enhanced Active Choice will result in more compliance than basic Active Choice. We test these

hypotheses in four studies involving three different decision tasks: intention to get a flu shot (study 1), desire to get a flu shot reminder (study 2), and enrollment and disenrollment in a prescription drug refill program (studies 3 and 4). Studies 1 and 2 are lab-based studies involving hypothetical decisions; studies 3 and 4 are both field studies involving real decisions made by customers of a pharmacy benefits management company. Study 1 compares the two types of Active Choice (Unenhanced and Enhanced) with opt-in, study 2 compares the two types of Active Choice with both opt-in and opt-out defaults, and studies 3 and 4 both compare Enhanced Active Choice with opt-in.

Beyond examining behavioral intentions and preferences (in studies 1 and 2) and actual choices and follow-through on those choices (in studies 2 and 3), a secondary objective was to investigate the processes underlying the impact of Active Choice. In particular, we examined whether the subjective experience of regret aversion that has been frequently highlighted in the literature on the status quo bias and default effect can account for the impact of Active Choice on compliance. Specifically, in study 2 we test whether, compared to opt-in and opt-out defaults, Active Choice results in greater compliance because the choice structure enhances desire to minimize future regret from not complying with the option preferred by the communicator (e.g., getting a flu shot).

Given that one of the great potential advantages of active choice over opt-out is the greater commitment expected to obtain from the former, a third objective was to examine the effect of Active Choice on subsequent commitment. We were not, however, able to observe commitment associated with opt-out in the real decision context addressed in our field studies because opt-out was not feasible, for several of the reasons discussed in the introduction. Instead, therefore, we compare Enhanced Active Choice to opt-in. This is an extremely high bar

for Active Choice to surmount, given that one would expect maximal commitments in an opt-in situation in which people only receive a particular option if they voluntarily choose it (Cioffi & Garner, 1996). It is natural to anticipate that forcing someone to make a choice, as occurs in Active Choice, would result in lower commitment than if they were to make the same choice more freely in an opt-in context. In studies 3 and 4 we examine the degree of disenrollment from the chosen alternative in opt-in and Enhanced Active Choice conditions. Support for Active Choice would be strengthened if disenrollment from Active Choice decisions is very similar to that from opt-in decisions.

Affirmation of these predictions would provide empirical support for the use of Active Choice to increase the rate of healthy behaviors. Our theoretical contribution is based on demonstrating that Active Choice is persuasive because it prompts regret aversion. From a practical perspective, evidence for Active Choice would have far reaching implications for all practitioners designing persuasive communication for a range of difficult decisions particularly those that involve inter temporal and/or emotional tradeoffs. Evidence for Active Choice would suggest a viable alternative to opt-in in settings in which opt out is not feasible or unethical, with the enhancement of the option preferred by the communicator that is part of Enhanced Active Choice.

### **Study 1: Choice Structure and Intentions**

#### Method

Participants and Procedure. Fifty-five employees from an educational institution participated in the study. Participants were recruited via email. They were randomly assigned to one of three choice structure conditions: opt-in, Active Choice (without advantaging one option), and

Enhanced Active Choice in which one option is advantaged.

All three messages contained the following introduction: “We would like you to imagine that you are interested in protecting your health. Your employer tells you about a hypothetical program that recommends you get a flu shot this Fall and possibly save \$50 off your bi-weekly or monthly health insurance contribution cost.” (The \$50 flu shot program was actually implemented the week following the experiment.) Each message ended with one of three choice structures. In the opt-in condition they were asked to “Place a check in the box if you will get a Flu shot this Fall.” In the Active Choice condition respondents were asked to “Place a check in one box: I will get a flu shot this Fall or, I will not get a flu shot this Fall” similar to what was described in Carroll et al., 2009. In the Enhanced Active Choice condition respondents were asked to choose between two alternatives: “I will get a Flu Shot this Fall to reduce my risk of getting the flu and I want to save \$50 or, I will not get a Flu Shot this Fall even if it means I may increase my risk of getting the flu and I don’t want to save \$50.”

## Results and Discussion

The percentage of respondents who agreed to get a flu shot served as the key dependent measure. The results of a one-way analysis of variance (ANOVA) examining the effect of choice structure on choice indicated a significant effect ( $F(1, 54) = 4.27, p < .05$ , all tests two-tailed). As predicted (H1), more respondents (69%) said they would get a flu shot this fall in the Active Choice conditions than when they were asked to opt-in (42%). Although the two Active Choice (Unenhanced and Enhanced) conditions were not significantly different ( $F < 1$ ), consistent with H2, compliance was directionally higher in the Enhanced Active Choice (75%) than Active Choice (62%) condition.

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Insert Figure 1 about here  
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These findings provide evidence, consistent with the findings of Carroll et al. (2009) that Active Choice is more persuasive than an open response format that relies on the individual to opt-in. In addition, there is suggestive evidence that framing the alternatives in a way that highlights the advantages of one alternative can shift preferences in that direction, thereby increasing the share of the preferred alternative while avoiding the disadvantages inherent in opt-out.

### **Study 2: Choice Structure and Preferences**

The primary objectives of study 2 were to replicate the effects of choice structure with the addition of the second type of default, opt-out, and to enrich our understanding of the process underlying the Active Choice effect. This entailed comparing four choice structures, opt-in, opt-out, Active Choice, and Enhanced Active Choice. In this case, we focused on respondents' desire to get a flu shot *reminder* (as opposed to the shot itself, in study 1), and we also assessed regret aversion by eliciting perceived regret from not getting a flu shot (Simonson, 1992).

#### Method

Participants and Procedure. One hundred and ten employees from an educational institution who had not participated in the first study volunteered for this study. Participants were recruited via email. They were randomly assigned to the four choice structure conditions. In all the conditions they were asked to consider a hypothetical program which would send them a

reminder to get a flu shot during the Fall. In the opt-in condition they were asked to “Place a check in the box if you want a reminder to get a Flu Shot.” In the opt-out condition, they were asked to “Place a check in the box if you DO NOT want a reminder to get a flu shot.” In the Active Choice condition respondents were asked to place a check in one box: “I don’t want a reminder to get a flu shot” or, “I want a reminder to get a flu shot.” In the Enhanced Active Choice condition respondents were asked to choose between: “I want a reminder to get a flu shot” or, “I want to remind myself to get a flu shot.” Upon completing the choice task, participants in all four conditions reported the degree to which they anticipated they would regret it if they failed to get a flu shot in the Fall (1 = disagree, 7 = agree, Simonson, 1992).

## Results and Discussion

The percentage of respondents who agreed to receive a flu shot reminder served as the key dependent measure. The results of a one-way analysis of variance (ANOVA) examining the effect of choice structure on compliance indicated a significant effect ( $F(1, 119) = 7.65, p < .05$ ). As predicted (H1), more respondents (72%) requested a flu shot reminder in the Active Choice conditions than when they were provided with the opt-in default (45%,  $F(1, 96) = 7.51, p < .01$ ). Surprisingly, there were no significant compliance differences in the two default conditions (opt-in = 45%, opt-out = 52%,  $F < 1$ ), and equivalently surprising, more respondents requested a flu shot reminder in active choice than in opt-out although this effect was only marginally significant ( $F(1, 81) = 2.86, p < .10$ ). Consistent with H2, respondents complied at significantly higher rates in the Enhanced Active Choice (93%) condition than the Active Choice condition (52%,  $F(1, 58) = 15.58, p < .01$ ).

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Insert Figure 2 about here

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A similar analysis was performed on the regret aversion measure. Supporting the idea that costs are likely to be ignored or denied in the absence of an immediate explicit choice, respondents expressed more concern about regretting not getting a flu shot in the Active Choice conditions ( $M = 4.53$ ) than the opt-in default ( $M = 3.53$ ,  $F(1, 96) = 4.27$ ,  $p < .05$ ). Consistent with the compliance data, there were no significant differences in perceived regret in the two default conditions (opt-in,  $M = 3.53$ ; opt-out,  $M = 3.00$ ,  $F < 1$ ), and respondents felt more regret in Active Choice than in opt-out ( $F(1, 81) = 7.74$ ,  $p < .01$ ). Consistent with H2, respondents expressed more concern about regretting not getting a flu shot when they received Enhanced Active Choice ( $M = 4.95$ ) than Active Choice ( $M = 4.02$ ,  $F(1, 58) = 3.76$ ,  $p < .05$ ).

We conducted mediation analyses to examine whether participants' choice is influenced by regret aversion. A series of regression analyses provide support for the premise that regret aversion or anticipating regret from not getting a flu shot partially mediated the relationship between choice structure and compliance (Baron & Kenny, 1986; see figure 3): a) choice structure (1 = defaults, 2 = Active Choices) led to regret aversion ( $\beta = .26$ ,  $t(119) = 2.92$ ,  $p < .01$ ); b) regret aversion induced more compliance ( $\beta = .26$ ,  $t(119) = 2.97$ ,  $p < .01$ ); c) choice structure had a direct effect on compliance ( $\beta = .25$ ,  $t(119) = 2.77$ ,  $p < .01$ ); d) the effect of choice structure became less significant when regret aversion was included in the model as a predictor ( $\beta = .19$ ,  $t(119) = 2.11$ ,  $p < .05$ ), whereas the effect of minimizing regret remained significant ( $\beta = .21$ ,  $t(119) = 2.36$ ,  $p < .05$ ).

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Figure 3 about here

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These findings provide evidence that Active Choice is more effective in eliciting a desired behavior than defaults, and further suggest that the success of Active Choice operates in part through its accentuation of regret aversion. Furthermore, and similar to study 1, but in this case statistically significant, Enhanced Active Choice leads to greater choice of the desired alternative than does basic Active Choice.

### **Studies 3 and 4: Choice Structure and Rates of Enrollment/Disenrollment**

The primary objectives of the two field studies were to test the effects of choice structure on behavior in a context very different than flu shots (prescription refills) and to examine, given the importance of ongoing engagement, differences between choice formats in subsequent disenrollment. Both field studies tested the impact of the Enhanced Active Choice approach to the opt-in message currently used by VCS/Caremark, a Pharmacy Benefit Manager (PBM). In study 3, the message manipulation was in a recorded telephone message sent to members of the PBM. In study 4, the message manipulation was on the PBM's web page. The key dependent measure in both studies was the fraction of members choosing to enroll in an 'automatic refill' program automatic prescription refill program called ReadyFill@Mail<sup>tm</sup> for chronic medications versus the members' managing their prescription drug refills themselves. We also compared disenrollment rates between members who opted-in to the automatic refill program with members who chose this option when confronted with the Enhanced Active Choice.

Method

Participants and Procedures. Nine thousand nine hundred and fifty CVS/Caremark members participated in study 3, and eleven thousand one hundred and eighty two CVS/Caremark members participated in study 4. The opt-in and Enhanced Active Choice groups did not differ on age, gender, and prescription refill opportunities for both studies. Since we used a website for study 4, in that study, we ensured the opt-in and Enhanced Active Choice groups were similar on their familiarity with the website.

We used a voice recording to transmit the two choice structures in study 3. The opt-in message asked members (n = 5,491) to press 1 if they wanted to be transferred to Customer Care or to press 2 if they were not interested in enrolling in the automatic refill program. The Enhanced Active Choice message asked members (n = 4,459) to press 1 if they preferred to refill their own prescription by themselves each time or to press 2 if they preferred the PBM to do it for them automatically. Members who chose to enroll were transferred to a service representative. Members were also given a toll-free number to call if they wished to discontinue enrollment at any time.

A web-site was redesigned to test the effect of Active Choice in study 4. When the PBM member logs on to the website, the prescription (re) ordering site lists all the prescriptions that are eligible for automatic refills (some prescriptions are ineligible because they require authorization). The opt-in format gave members (n = 4,232) the option to opt-in for ReadyFill@Mail™ by clicking a red box. Members could go to other services on the website if they chose not to opt-in. In the Enhanced Active Choice condition members (n = 6,950) were required to choose between two options – “I Prefer to Order my Own Refills” or “Enroll in ReadyFill@Mail”. Members could not navigate from the website without making a choice. To

assess commitment, members in the Enhanced Active Choice condition were forced to choose between these two options every time they visited the website.

## Results

The results from studies 3 and 4 support the advantage of Enhanced Active Choice over the Opt-in default (H1). 32% of the members chose to comply when they were presented with Enhanced Active Choice in the recorded phone message (study 3) as compared to 15.7% who were asked to opt-in ( $\chi^2(1) = 365.63, p < .001$ ). The results from study 4 also support H1. The redesigned webpage with Enhanced Active Choice resulted in significantly higher member enrollment than the opt-in webpage (21.9% vs. 12.3%,  $\chi^2(1) = 608.53, p < .001$ ). Interestingly, Enhanced Active Choice also significantly increased participation rates - people filled more prescriptions in Enhanced Active Choice ( $M = 2.12$ ) than the opt-in condition ( $M = 1.78, t = 4.04, p < .001$ ). We believe preferences for the program were enhanced once people committed to joining the program (cf. Botti & Iyengar, 2004; Cioffi & Garner, 1996).

One of the main purposes of studies 3 and 4 was to examine the effect of Enhanced Active Choice on commitment. For this purpose, we compare the disenrollment rates among enrollees in the Enhanced Active Choice and Opt-in conditions for three months between June and August 2010. The results are equivocal. In study 3, disenrollment percentages in the Enhanced Active Choice and opt-in condition are virtually identical (22.1% vs. 21.4%),  $\chi^2(1) = 0.02, p > 0.69$ . In study 4, average time to withdraw was 12 days. 15.2% of members who enrolled via the Enhanced Active Choice web page disenrolled, whereas 10.2% of members in the opt-in condition disenrolled. This difference is statistically significant at ( $\chi^2(1) = 30.66, p < 0.001$ ), although not quantitatively very large.

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Figures 4 and 5 about here  
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### **General Discussion**

The present research demonstrates how Active Choice can be used to increase medication adherence, and how its effectiveness can be enhanced. Across four studies, our data clearly support the advantages of Active Choice over opt-in in increasing participation rates. Respondents were more willing to get a flu shot (study 1) or reminders (study 2), and members of a PBM were more likely to enroll in a prescription automatic refill program when presented with Enhanced Active Choice instead of an opt-in request (studies 3 and 4). We replicate prior research that active choice enhances intentions (Spital 1993; 1995) and compliance (Carroll et al., 2009) more than opting in. Moreover, we show that, by advantaging one option, Enhanced Active Choice can produce significantly higher compliance than Active Choice, presumably by highlighting some of the key advantages and disadvantages of the two alternatives (study 2). Finally, our studies (3 and 4) provide important evidence on the effect of Active Choice on commitment. Despite accessible disenrollment methods – members were given a toll-free number (study 3) and were on the web site (study 4) - there were small differences in disenrollment rates for members who enrolled via Enhanced Active Choice or opt-in. The similarity in commitment levels for Enhanced Active Choice and opt-in suggests that the advantages of Active choice over opt in in terms of initial enrollment are likely to be sustained over time.

We provide evidence on why Active Choice increases adherence to medical

recommendations. Specifically, in study 2 we found that respondents were more concerned about minimizing their regret from not getting a flu shot in Active Choice than in opt-out. These findings are consistent with other studies that have observed more cognitive dissonance and regret among choosers than non-choosers (Festinger, 1957; Ordóñez & Connolly, 2000; Zeelenberg, van Dijk, & Manstead, 2000), and with studies indicating the motivational role of negative emotions for increasing vigilance and compliance (Luce, 2005). Active Choice gets around procrastination or decision avoidance as a way of coping with negative emotions (Luce, Bettman, & Payne, 1997; Luce, Payne, & Bettman, 1999).

Active Choice is relatively easy to implement in settings in which there are regular opportunities to interact with potential target groups. It is best implemented in conjunction with a mandatory task such as employee benefits enrollment (cf. Carroll et al., 2009). Our field studies provide evidence on the robustness of the Enhanced Active Choice effect on medication adherence using two different methods of presentation: phone recorded message and web. In addition to more members enrolling, there was an increase in the average number of prescriptions per member in the Enhanced Active Choice condition (study 4). We believe preferences for the program were enhanced once people committed to joining the program (cf. Botti & Iyengar, 2004; Cioffi & Garner, 1996). Together these findings indicate Enhanced Active Choice increases percentage enrollment as well as increases participation among those who are enrolled. The effect of Active Choice on participation rates can be tested in other contexts such as encouraging employees to voluntarily enroll in programs such as Save More Tomorrow (Thaler & Benartzi, 2004).

We speculate there are likely to be additional positive consequences of choosing actively beyond the ones presented here. Active Choice may enhance self-efficacy or confidence that one

can actually undertake the advocated behavior (Witte & Allen, 2000). Actively choosing may also produce higher levels of perceived responsibility (Botti & McGill, 2006) and satisfaction (Cioffi & Garner, 1996) than opt-out where control or choice is implicit and this may lead to longer-term rates of ongoing adherence. These approaches have the potential to be highly cost effective alternatives to improving healthy behaviors and as such further investigation of the relationship between default and non-default choice structures, perceived control, efficacy, and satisfaction would be highly worthwhile.

**Figure 1**

**Study 1: Percentage of employees who intend to get a Flu Shot when asked to opt-in or actively choose to get or not get a Flu Shot.**

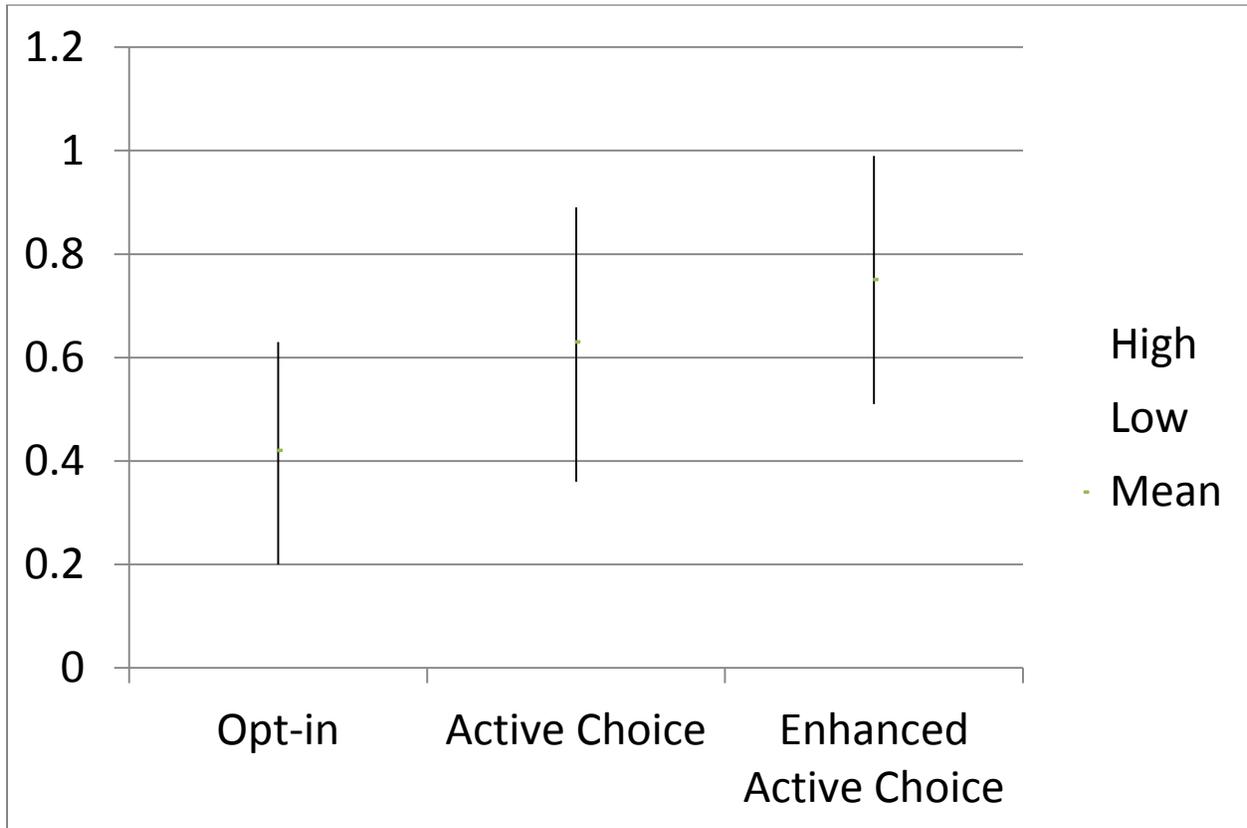
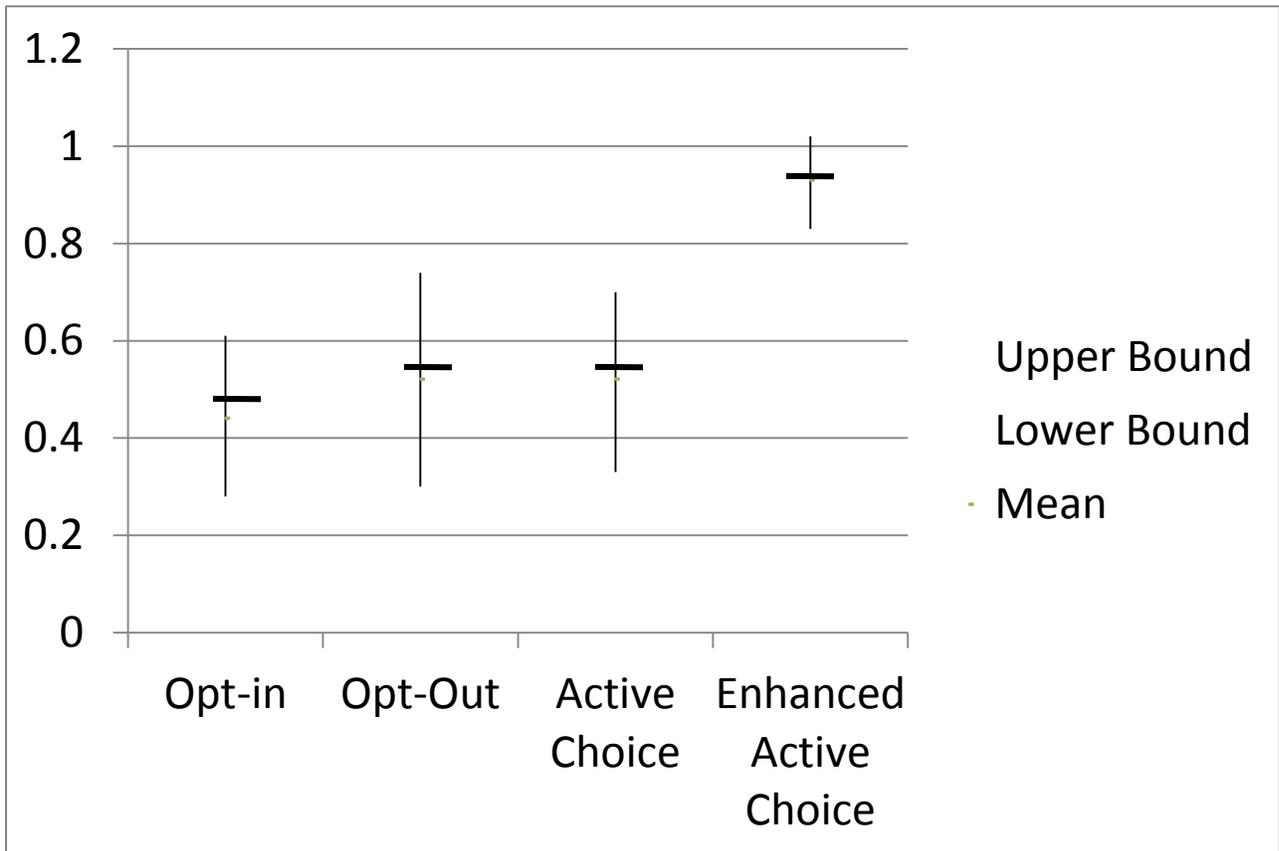


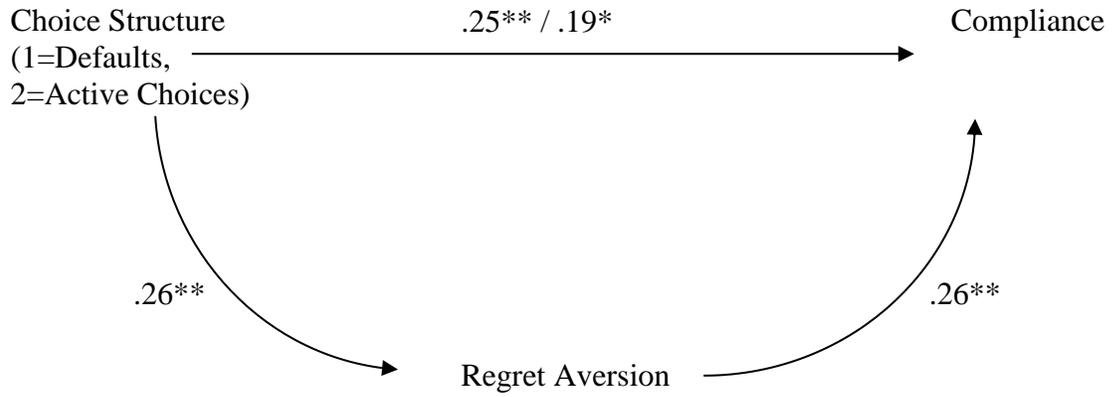
Figure 2

Study 2: Percentage of employees who requested a reminder to get a Flu Shot when asked to opt-in, opt-out, or actively choose to get or not get a Flu Shot.



**Figure 3**

**Regret aversion as a mediator between choice structure and compliance**

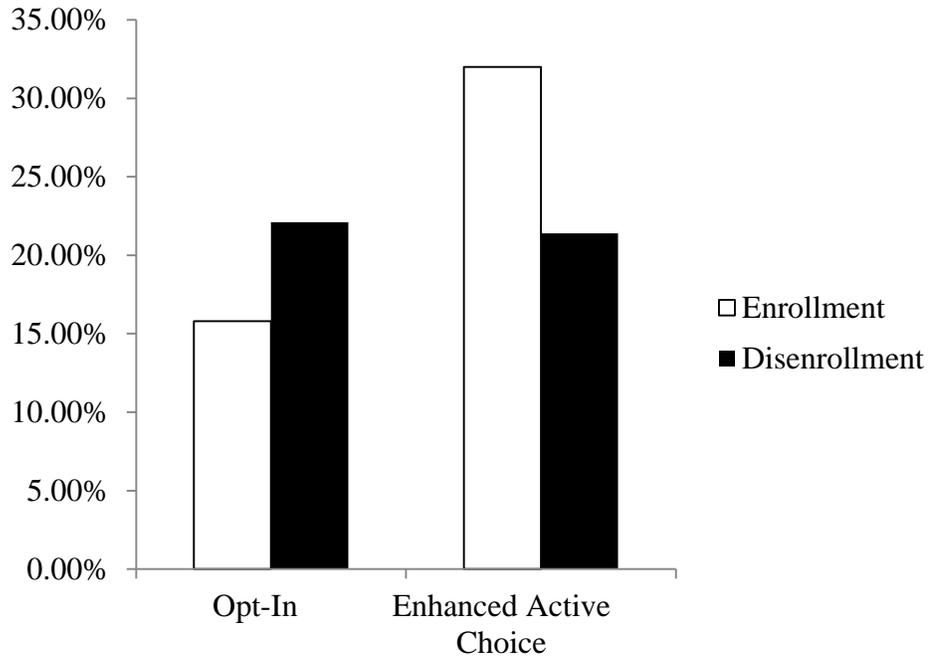


\*significant at  $p < .05$

\*\* significant at  $p < .01$

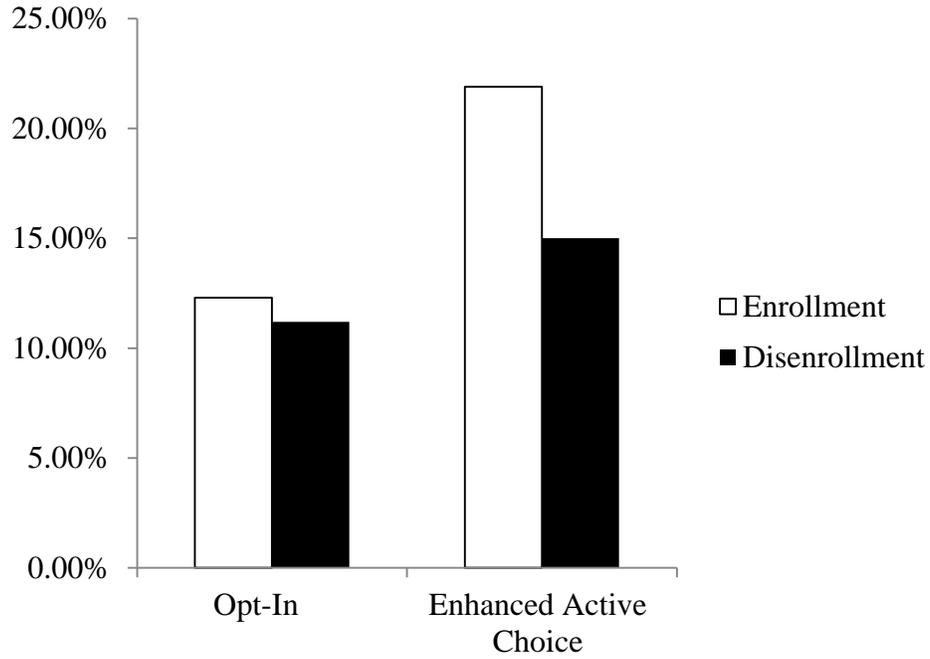
**Figure 4**

**Study 3: Enrollment and disenrollment percentages for prescription refills via phone recorded messages in opt-in and Enhanced Active Choice conditions from July - August 2010**



**Figure 5**

**Study 4: Enrollment and disenrollment percentages for a prescription refill website in opt-in and Enhanced Active Choice from June – August 2010**



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