

Everyone else is making a mistake:
Effects of peer error on saving decisions*

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Thrift Savings Plan

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Abstract

This paper describes an intervention to increase retirement saving among 1,254 federal employees. Specifically, we sent two emails encouraging employees to leave the default retirement contribution amount (3 percent of salary) and start saving enough to get the full match available to them (at least 5 percent of salary). Email 1 provided employees with personalized information, while Email 2 included similar information about their peers. We find that after 3.5 months, those who received either email were more than twice as likely to increase their contributions compared to those who received no email. Results both support previous research that personalized information can motivate action and raise questions about the nuances of peer influence.

Keywords: Retirement saving, retirement contributions, peer influence, personalization, behavioral science

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Introduction

Several reports have suggested that Americans are not saving enough for retirement (U.S. Census Bureau, 2017 and 2014; University of Michigan, 2014 and 2016; U.S. Board of Governors of the Federal Reserve System, 2016). For example, the National Retirement Risk Index found that 50 percent of U.S. households are currently “at risk” of not being able to maintain their current lifestyle when they stop working (Munnell, Hou, and Sanzenbacher, 2018). Similarly, after linking responses from the Health and Retirement Study with Social Security data, Chen, Munnell, and Sanzenbacher (2018) concluded that 42 percent of U.S. households will be unable to replace 75 percent of their final year’s income.

To address these issues, numerous interventions have examined ways to encourage people to save more for retirement. While many have focused on the power of defaults and inertia (Samuelson and Zeckhauser, 1988; Madrian and Shea, 2001; Thaler and Benartzi, 2004; Beshears et al., 2008, and Benartzi, Peleg, and Thaler, 2012), a substantial number have aimed to inspire participant action. Efforts ranging from highlighting future plans and encouraging careful thought about savings rates to prompting people to calculate what they missed in matching have yielded mixed results (Choi, Laibson, Madrian, and Metrick, 2002; Duflo and Saez, 2002; Choi, Laibson, and Madrian, 2011).

Other interventions that provided participants with clear steps about how to contribute, simplified enrollment forms, or personalized retirement income projections have had more positive effects (Keller, Keller and Lusardi, 2009; Choi, Laibson, and Madrian, 2009; Beshears, Choi, Laibson, Madrian, 2013; Goda, Manchester, and Sojourner, 2014). Additionally, while not directly related to retirement, Kling, Mullainathan, Shafir, Vermeulen, and Wrobel (2012) found

that people provided with personalized information about less expensive prescription drug plans were more likely to switch.

This paper describes an intervention to encourage retirement saving among federal employees. We find that after 3.5 months, those who received one of two emails (with a reminder) were more than twice as likely to increase their contributions as those who received no email. These results support previous findings that emails can make a meaningful difference in retirement saving decisions (for example, Clark, Hammond, Hanson, and Morrill, 2017; Choi, Haisley, Kurkowski, and Massey, 2017). The investigation also contributes to the behavioral science literature, since the emails were designed using insights from psychology and behavioral economics. Finally, it raises important questions about peer influence, which has historically yielded mixed results in financial contexts (for example, Bhargava and Manoli, 2015).

Literature Review

As noted in the introduction, an emerging subcategory of the retirement literature has used low-cost email outreach to increase saving. For example, Clark et al. (2017) sent various flyers via email to 4,968 North Carolina state employees (ages 50-69) using random assignment. Some messages focused on tax advantages or the benefits older workers received from additional saving, while others mentioned that pensions or Social Security may not be sufficient to cover surprise expenses. A month later, 2.8 percent of those who received an email had increased their contributions, compared to 1.8 percent for those who received no email.

Similarly, using emails emphasizing higher contribution amounts, Choi et al. (2017) also successfully increased 401(k) savings by up to 2.9 percent of salary. (Surprisingly, emails that called attention to lower contribution amounts led to decreased saving.) Finally, in a randomized

controlled trial with 4,078 federal employees, those who received a single email were twice as likely to contribute at or above the full match threshold after two months: 4.2 percent compared to 1.9 percent (Chojnacki, Amin, Perez-Johnson, Darling, Moorthy, and Lefkowitz, 2016).

In addition, researchers have long studied whether knowing what peers are doing can affect people's actions (Banerjee, 1992). For example, people who know which menu items are well-liked by other diners are more likely to order those items, hotel guests who learn that a majority of previous visitors reused their towels are more likely to do the same, and homeowners informed that they are using more energy than their neighbors are more likely to reduce consumption (Cai, Chen, and Fang, 2009; Goldstein, Cialdini, and Griskevicius, 2008; Allcott, 2011; Allcott and Rogers, 2014). As Beshears, Choi, Laibson, and Madrian (2018) note, similar findings have emerged in studies related to voting, donating to charity, and respecting nature in national parks, though at least one environmental study found that providing peer information led to unwanted "boomerang" effects for some people (Gerber and Rogers, 2009; Frey and Meier, 2004; Cialdini, Demaine, Sagarin, Barrett, Rhoads, and Winter, 2006; Schultz, Nolan, Cialdini, Goldstein, and Griskevicius, 2007).

Investigations into the effect of peer influence on financial decisions have been less conclusive. Duflo and Saez (2002) found that participation in a retirement plan at a large university varied significantly by department, suggesting that people shared information about the plan and made similar decisions as their colleagues. However, another landmark study found the opposite: Beshears, Choi, Madrian, and Milkman (2015) sent manufacturing employees mailings with the percentage of coworkers near their same age who were contributing to their firm's retirement plan. Among those who were not saving, people who received this peer information were significantly *less* likely to enroll in the plan than those who did not receive it.

Furthermore, as the percentage of contributing coworkers increased, the enrollment rate decreased by almost twice as much.

Relatedly, after sending various letters to 35,050 individuals who were eligible for the Earned Income Tax Credit but had not claimed it, Bhargava and Manoli (2015) found that describing a social norm (“Usually, four out of every five people claim their refund”) backfired: Response rates among those who received this information were slightly lower than in the control group. Finally, in a follow-up to Chojnacki et al.’s (2016) work, Amin, Chojnacki, Perez-Johnson, Darling, Moorthy, and Lefkowitz (2017) informed 765 federal employees that the majority of their coworkers were saving at least 5 percent of salary for retirement. This did not appear to improve response rates when compared to an email without peer information.

Newcomb (2018) suggests that the *type* of peer plays a role. Analyzing survey data on the financial behaviors of 581 people, the author found that those who compared their financial status with people they thought were doing better than themselves ended up more stressed. “Most of us,” the author writes, “appear to be actively making ourselves feel bad about our own financial circumstances by always looking up at people who have more.” This insight might have been key in Newall and Parker’s (2018) study of 1,003 Mechanical Turk² users, which found positive peer influence effects. Participants warned that “Some people invest based on past performance, but funds with low fees have the highest future results” were almost twice as likely to minimize fees when choosing virtual investments. In other words, rather than comparing

² Amazon’s Mechanical Turk platform recruits thousands of virtual users to undertake various tasks, such as completing surveys. There are some limitations, since participants are predicting what they would do rather than actually doing it; however, a growing number of researchers use the platform for exploratory work.

participants to those who were better off, the researchers referenced peers who were making a sub-optimal decision and explained how to make a better one.

Purpose

The goal of this study was to investigate whether sending behaviorally informed emails could inspire federal employees to increase their retirement contributions. Specifically, emails encouraged employees to leave the default retirement contribution amount (3 percent of salary) and start saving enough to get the full match available to them (5 percent of salary or more). We looked at whether participants would respond to 1) personalized information about themselves and 2) similar information about their peers.

Method

Participants

We contacted 1,254 federal civilian employees participating in the Thrift Savings Plan (TSP), the 401(k)-type plan covering 5 million federal government employees and members of the uniformed services. All employees had been with the government for less than two years and were automatically enrolled into the TSP between January 1, 2017, and July, 1, 2018. They ranged in age from 19 to 80 and had no outstanding TSP loans.

None of the participants had made any changes to the default contribution amount—3 percent of salary—since automatic enrollment, meaning they had missed out on some matching available to them. (Eligible TSP participants receive the following match structure: dollar-for-dollar on the first 3 percent of salary and 50 cents on the dollar for the next 2 percent [Thrift Savings Plan, 2019].) The median amount of missed matching among the group was \$317.

Everyone worked at agencies that used the National Finance Center to manage payroll transactions; focusing on one payroll system made it easier to provide specific instructions for making the change. Finally, all group members had at least one email address on file. There were no restrictions related to account balance, age, or salary.

Approach

Participants were randomly assigned into three groups. Thirty percent received Email 1, which included vivid colors and design as well as a personalized estimate of how much they had missed in matching rounded to the nearest dollar: “You’ve missed out on **\$515** in matching so far. Unless you take action, you could miss even more.” Thirty percent received Email 2, which was simpler aesthetically but featured an estimate of what *other* people contributing 3 percent of salary had missed: “Last year, automatically enrolled participants who stayed at 3% missed out on **\$515** in matching on average. Don’t join them.”³ (See Figures 2 and 3.) The final 40 percent received neither email.

Both messages framed the missed matching as a loss (Tversky & Kahneman, 1992), included clear instructions for changing contributions (Leventhal, Singer, and Jones, 1965), and provided the phone number for participants to call if they had trouble logging into their electronic payroll system (Lusardi, Keller, and Keller, 2009). Emails went out on August 30, 2018, followed by reminders on September 18, 2018. In mid-December 2018, we reviewed TSP records to determine how many in each group had started contributing more than 3 percent, using

³The subject lines were also different: “You’re missing out on free money. Here’s how to get it” for Email 1 and “This email may keep you from missing out on \$515 this year” for Email 2. We used two separate email addresses to send the outreach as well: Email 2 came from an email address ending in “.gov” while Email 1 came from an email address ending in “.com”.

both Chi square and two-sample proportion tests (two-tailed) to determine statistical significance.⁴

Results

Table 1 and Figure 1 show how many people had increased their TSP contributions at follow-up. After 3.5 months, 22.73 percent of those who received Email 1 had started saving more as did more than a quarter (26.34 percent) of those who received Email 2. In both cases, this was more than double the rate of those who received no email (9.98 percent) and highly statistically significant at the $p < 0.0001$ level.

Those who received Email 2 were slightly more likely to stop contributions altogether, though this affected a small number of people (2 percent vs 1 percent for the control group and Email 1). Additionally, a handful of participants—two who received Email 1, four who received Email 2, and one who got no email—were no longer in the TSP’s system at follow-up, likely due to account cash-outs after they left federal employment.

Discussion

Both emails led to more people increasing their savings rates compared to the baseline, with Email 1 raising this outcome by 12.8 percentage points (95% CI: 7.76 – 17.74) and Email 2 increasing it by 16.4 percentage points (95% CI: 11.17 – 21.55). These results support previous findings that email offers a low-cost, scalable option for reaching employees about their retirement accounts. The magnitude of the increase is also noteworthy as many previous

⁴ Agencies automatically deposit an amount equal to 1% of salary into the TSP accounts of eligible participants (Thrift Savings Plan, 2019). We defined “contributing more than 3 percent” as 1) having a code on file from the agency indicating that the participant was no longer contributing the default amount and 2) having a ratio of employee contributions to automatic (1%) contributions that was greater than 3.

retirement interventions using email found relative effects ranging from 1 to 7.5 percentage points, depending on the sample size (Amin et al., 2017; Chojnacki et al., 2016; Clark et al., 2017).

The characteristics of the selected participants are also relevant. First, everyone had previously remained at the default savings amount after automatic enrollment, and our target group tended to be relatively young (median age: 36). Second, none of the participants had any outstanding loans from their retirement accounts, which might have made them more amenable to a contribution increase. Third, all participants were already contributing, which previous studies suggest is a strong predictor of whether people will respond to retirement outreach (Chojnacki et al., 2016, for example).

Fascinatingly, the message with peer information appeared to have a slightly larger effect than the personalized email, though the difference was not statistically significant ($p > 0.125$).⁵ This was surprising considering the previous success of customized information as well as historically mixed results associated with social norms in financial contexts (Goda et al., 2014; Kling et al., 2012; Beshears, Choi, Madrian, and Milkman, 2015; Bhargava and Manoli, 2015). Nuances raised by Newall and Parker (2017) and Newcomb (2018) offer a potential explanation: Rather than comparing participants to people who were doing better, this intervention stressed that others were missing out on something and provided clear instructions for how to get it. The distinction might have empowered recipients rather than demoralizing them.

⁵ Email 2 resulted in a larger effect than Email 1 as compared to the control group, but when comparing the two emails to each other with a two-sample proportion test (one-tailed), the difference is not statistically significant. Also, since we designed the test to see if either email was more effective than the baseline, rather than compare the two emails to each other, variance in design, subject line, and sender name could account for part of the difference.

Conclusion

While defaults remain a powerful force in retirement plan design, understanding ways to successfully inspire participant action is also vital. Researchers have tried numerous strategies, from comprehensive financial education and counseling interventions to less intensive, more scalable outreach focused on specific actions. As a growing subcategory of the literature documents, email in particular can be a cost-effective method for delivering retirement outreach.

In this paper, we find that among federal employees who had not changed their savings amount since automatic enrollment, both of our emails more than doubled the percentage who increased their contributions after 3.5 months. The results support previous research (Goda et al., 2014; Kling et al., 2012) that personalized information can motivate action, and somewhat surprisingly, focusing on what *peers* had missed in matching was also persuasive.

The findings raise interesting questions about the nuances of peer influence. Although invoking social norms has been effective in areas ranging from energy consumption to menu choices, such attempts have been less reliable in financial contexts. The difference might lie in the type of comparison: Contrasting participants with peers they believe are doing better financially can be demotivating (Newcomb, 2018), but informing them of peers' mistakes—and providing simple steps to avoid those mistakes—might inspire.

References

- Allcott, H. (2011). "Social Norms and Energy Conservation." *Journal of Public Economics* 95(9–10), 1082–1095.
- Allcott, H., & Rogers, T. (2014). "The short-run and long-run effects of behavioral interventions: Experimental evidence from energy conservation." *American Economic Review* 104(10), 3003–3037.
- Amin, S., Chojnacki, G., Perez-Johnson, I., Darling, M., Moorthy, A., and Lefkowitz, J. (2017). Emails prompt employees to save more for retirement: DOL behavioral interventions final project brief. Retrieved from www.dol.gov/asp/evaluation/completed-studies/BI-Files/2-50291-EBSA-FinalBrief-20170501.pdf
- Benartzi, S., Peleg, E., & Thaler, R.H. (2012). "Behaviorally informed retirement savings plans." In Eldar Shafir, ed., *The Behavioral Foundations of Policy*. New York and Princeton, NJ: Russell Sage Foundation and Princeton University Press.
- Beshears, J., Choi, J.J., Laibson, D., & Madrian, B.C. (2018). Behavioral household finance. In *Handbook of Behavioral Economics: Foundations and Applications 1* (pp. 177–276). Amsterdam: Elsevier.
- Beshears, J., Choi, J.J., Laibson, D., & Madrian, B.C. (2008). "The importance of default options for retirement savings outcomes: Evidence from the United States." In Stephen J. Kay and Tapen Sinha, editors, *Lessons from Pension Reform in the Americas* (pp. 59-87). Oxford: Oxford University Press.
- Beshears, J., Choi, J. J., Laibson, D., & Madrian, B. C. (2013). Simplification and saving. *Journal of economic behavior & organization*, 95, 130-145.
- Beshears, J., J. J. Choi, D. Laibson, B. C. Madrian, and K. L. Milkman. (2015). "The effect of providing peer information on retirement savings decisions." *The Journal of Finance*, 70(3), 1161–1201.
- Bhargava, S., & Manoli, D. (2015). "Psychological frictions and incomplete take-up of social benefits." *American Economic Review*, 105(11): 1–42.

- Cai, H., Chen, Y., & Fang, H. (2009). "Observational learning: Evidence from a randomized natural field experiment." *American Economic Review* 99(3), 864–882.
- Chen, A., Munnell, A., & Sanzenbacher, G.T. (2018, November). *How much income do retirees actually have?* (Issue Brief No. 18-20). Retrieved from http://crr.bc.edu/wp/content/uploads/2018/11/IB_18-20.pdf
- Choi, J. J., Haisley, E., Kurkoski, J., & Massey, C. (2017). Small cues change savings choices. *Journal of economic behavior & organization*, 142, 378-395.
- Choi, J. J., Laibson, D., & Madrian, B. C. (2009). Reducing the complexity costs of 401(k) participation through quick enrollment. In *Developments in the Economics of Aging* (pp. 57-82). University of Chicago Press.
- Choi, J. J., Laibson, D., & Madrian, B. C. (2011). "\$100 Bills on the Sidewalk: Suboptimal investment in 401(k) plans." *Review of Economics and Statistics*, 93(3), 748–763.
- Choi, J.J., Laibson, D., Madrian, B. & Metrick, M. (2002). "Defined contribution pensions: Plan rules, participant decisions, and the path of least resistance." In *Tax Policy and the Economy*, vol. 16, ed. James Poterba, 67–113. MIT Press. Retrieved from https://scholar.harvard.edu/files/laibson/files/defined_contribution_pensions_plan_rules_participant_decisions_and_the_path_of_least_resistance.pdf
- Chojnacki, G., Amin, S., Perez-Johnson, I., Darling, M., Moorthy, A., & Lefkowitz, J. (2016). "Single email prompts individuals to increase retirement savings." Mathematica Policy Research. Retrieved from https://www.dol.gov/asp/evaluation/BISstudy/files/Single_Email_Prompts_Individuals_to_Increase_Retirement_Savings.pdf
- Clark, R.L., Hammond, R.G., Morrill, M.S., Khalaf, C. M. (2017). "Nudging retirement savings: A field experiment on supplemental plans." Retrieved from <http://papers.nber.org/tmp/80103w23679.pdf>
- Duflo, E., & Saez, E. (2002). "Participation and investment decisions in a retirement plan: The influence of colleagues' choices." *Journal of Public Economics*, 85(1), 121-148.
- Frey, B. S., & Meier, S. (2004). "Social comparisons and pro-social behavior: Testing "conditional cooperation" in a field experiment." *American Economic Review*, 94(5), 1717-1722.
- Gerber, A. S., & Rogers, T. (2009). "Descriptive social norms and motivation to vote:

- Everybody's voting and so should you." *Journal of Politics* 71(1), 178–191.
- Goda, G. S., Manchester, C. F., & Sojourner, J. (2014). "What will my account really be worth? Experimental evidence on how retirement income projections affect saving." *Journal of Public Economics* 119(C), 80–92.
- Goldstein, N., Cialdini, R. B., & Griskevicius, V. (2008). "A room with a viewpoint: Using social norms to motivate environmental conservation in hotels." *Journal of Consumer Research* 35(3), 472–482.
- Kling, J. R., Mullainathan, S., Shafir, E., Vermeulen, L. C., & Wrobel, M. V. (2012). Comparison friction: Experimental evidence from Medicare drug plans. *The Quarterly Journal of Economics*, 127(1), 199-235.
- Leventhal, J., Singer, R., and Jones, S. (1965). Effects of fear and specificity of recommendation upon attitudes and behavior. *Journal of Personality and Social Psychology*, 2, 20-29.
- Lusardi, A., P. A. Keller, and A. M. Keller. "New ways to make people save: A social marketing approach." NBER Working Paper No. 14715. Cambridge, MA: National Bureau of Economic Research, 2009.
- Madrian, B.C., & Shea, D.F. (2001). "The power of suggestion: Inertia in 401(k) participation and savings behavior." *Quarterly Journal of Economics*, 116, 1149-1187.
- Munnell, A.H., Hou, W., & Sanzenbacher, G.T. (2018, January). *National Retirement Risk Index shows modest improvement in 2016* (Issue Brief No. 18-1). Retrieved from http://crr.bc.edu/wp-content/uploads/2017/12/IB_18-1.pdf
- Newall, P. W. S., & Parker, K. (2018). Improved mutual fund investment choice architecture. Retrieved from <https://doi.org/10.31219/osf.io/qknjt>
- Newcomb, S. (2018). The comparison trap: How social comparisons affect our financial well-being. Retrieved from www.morningstar.com/lp/the-comparison-trap
- Samuelson, W., & Zeckhauser, R. (1988). "Status quo bias in decision making." *Journal of Risk and Uncertainty* 1, 7-59.
- Schultz, P., Nolan, J.M., Cialdini, R.B., Goldstein, N.J., & Griskevicius, V. (2007). The

constructive, destructive, and reconstructive power of social norms, *Psychological Science*, 18, 429-434.

Thaler, R.H., & Benartzi, S. (2004). "Save more tomorrow™: Using behavioral economics to increase employee saving." *Journal of Political Economy*, 112, S164-S187.

Thrift Savings Plan. (2019). *Summary of the Thrift Savings Plan*. Washington, D.C. Retrieved from <https://www.tsp.gov/PDF/formspubs/tspb08.pdf>

Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and uncertainty*, 5(4), 297-323.

University of Michigan. (2014). *Panel study of income dynamics*. Ann Arbor, MI. Retrieved from <https://psidonline.isr.umich.edu/>

University of Michigan. (2016). *Health and retirement study*. Ann Arbor, MI. Retrieved from <http://hrsonline.isr.umich.edu/modules/meta/2016/core/desc/h16dd.pdf>

U.S. Board of Governors of the Federal Reserve System. (2016). *Survey of consumer finances*. Washington, DC. Retrieved from www.federalreserve.gov/econres/scfindex.htm

U.S. Census Bureau. (2014). *Survey of income and program participation*. Washington, DC. Retrieved from www.census.gov/programs-surveys/sipp/data/2014-panel/wave-1.html

U.S. Census Bureau. (2017). *Annual social and economic supplement of the current population survey*. Washington, DC. Retrieved from www.census.gov/programs-surveys/sahie/technical-documentation/model-input-data/cpsasec.html

Table 1: Number who increased contributions

	Email 1	Email 2	No email
Increased contributions	85	98	50
No increase	289	274	451
Total	374	372	501

Figure 1: Percentage who increased contributions

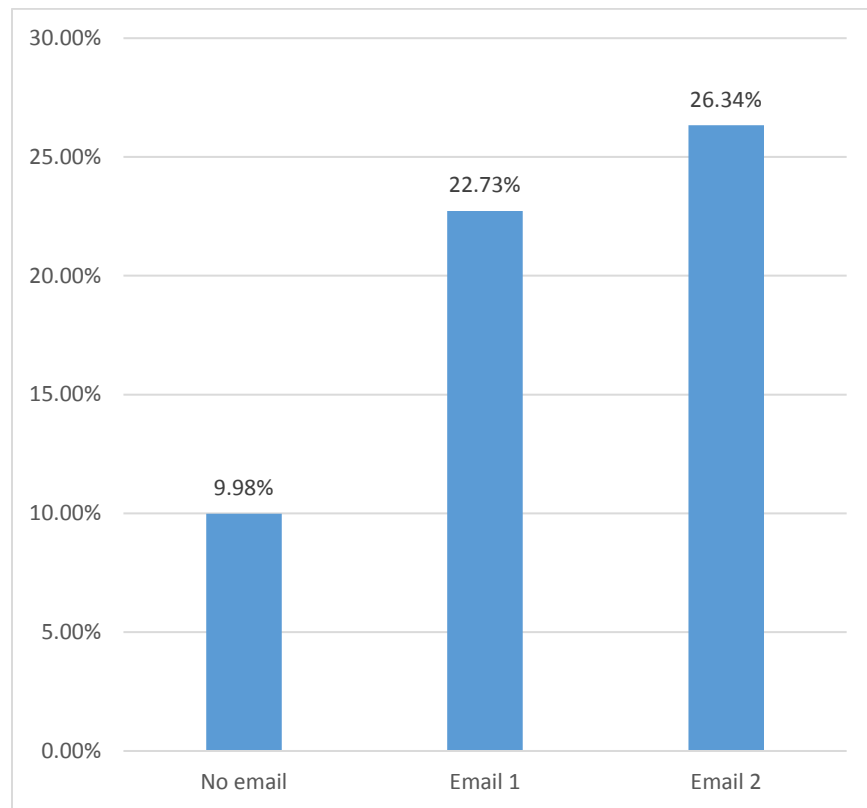


Figure 2: Copy of Email 1

Thrift Savings Plan DON'T MISS OUT.

Having trouble viewing this email? [View it as a Web page.](#)

You're missing out on free money. Here's how to get it

You were automatically enrolled in the TSP, which means you're currently contributing 3% of your salary to your retirement account. But you only get the full "match" from your agency if you contribute **at least 5%** of your pay. When you contribute 5%, your agency contributes 5% too.

You've missed out on \$515.00 in matching so far. Unless you take action, **you could miss even more.**

To change how much you save, log into your [Employee Personal Page](https://nfc.usda.gov/epps): nfc.usda.gov/epps

- Select "TSP."
- Click "Self-Service" and then "Change." (For Roth TSP, choose the "Roth contribution" option.)
- Enter your new dollar amount or percent (for example, 5%), decide the pay period it should start, and click "Continue."
- Review the changes. Click "Yes" to continue and then "Submit."
- Or you can submit [Form TSP-1](#) to your benefits/payroll office.

Need help logging in? Call 1-855-632-4468 and select option 5.

Thrift Savings Plan

Figure 3: Copy of Email 2

Thrift Savings Plan

This email may keep you from missing out on \$515 this year

You were automatically enrolled in the TSP, which means you're currently contributing 3% of your salary to your retirement account. But you only get the full "match" from your agency if you contribute **at least 5%** of your pay. When you contribute 5%, your agency contributes 5% too.

Last year, automatically enrolled participants who stayed at 3% missed out on **\$515** in matching on average. Don't join them. Here's what you can do:

To change how much you save, log into your [Employee Personal Page](https://nfc.usda.gov/epps): nfc.usda.gov/epps

- Select "TSP."
- Click "Self-Service" and then "Change." (For Roth TSP, choose the "Roth contribution" option.)
- Enter your new dollar amount or percent (for example, 5%), decide the pay period it should start, and click "Continue."
- Review the changes. Click "Yes" to continue and then "Submit."
- Or you can submit [Form TSP-1](#) to your benefits/payroll office.

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