
“Tax-Free”: The Effect of a Heuristic Cue on the Choice Between a TFSA and an RRSP

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PRÉCIS

Les auteurs examinent si et, le cas échéant, dans quelle mesure un indice heuristique, soit le terme « libre d’impôt » (*tax-free*), contenu dans le nom de l’un des deux principaux régimes d’épargne à l’abri de l’impôt au Canada — le compte d’épargne libre d’impôt (CELI) — influence les préférences en matière d’épargne des particuliers pour ce régime ou le régime enregistré d’épargne-retraite. Se fondant sur le modèle de traitement heuristique-systématique de l’information, les auteurs prédisent que le terme « libre d’impôt » constitue un indice heuristique favorable qui supprimera le traitement systématique et influencera les particuliers à choisir un régime d’épargne dont le nom contient ce terme. Ils ont mené trois expériences pour évaluer cette proposition. Dans l’ensemble, les résultats indiquent que les personnes ont une nette préférence pour un régime d’épargne à l’abri de l’impôt dont le nom contient le terme « libre d’impôt », quelle que soit la teneur de l’information explicative qui l’accompagne. La préférence pour les régimes d’épargne dont le nom contient le terme « libre d’impôt » peut indiquer qu’il est nécessaire d’améliorer l’éducation et les conseils financiers afin de réduire le recours à l’heuristique.

ABSTRACT

The authors investigate whether and, if so, the extent to which a heuristic cue, the term “tax-free,” contained in the name of one of the two primary tax-sheltered savings plans in Canada—the tax-free savings account (TFSA)—biases individuals’ saving preferences relative to the registered retirement savings plan. On the basis of the heuristic-systematic model of information processing, the authors predict that the term “tax-free” is a favourable heuristic cue that will suppress systematic processing and bias individuals toward selecting a savings plan with this term in its name. They conduct three experiments to test this proposition. Overall, the results suggest that individuals have a clear preference for a tax-sheltered savings plan with “tax-free” in

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its name—regardless of the content of accompanying explanatory information. The preference for savings plans with “tax-free” in the name may suggest the need for more education and financial advice to reduce the use of heuristics.

KEYWORDS: TFSA ■ RRSP ■ SAVINGS ■ SAVINGS PLANS ■ PSYCHOLOGICAL ASPECTS ■ PUBLIC FINANCE

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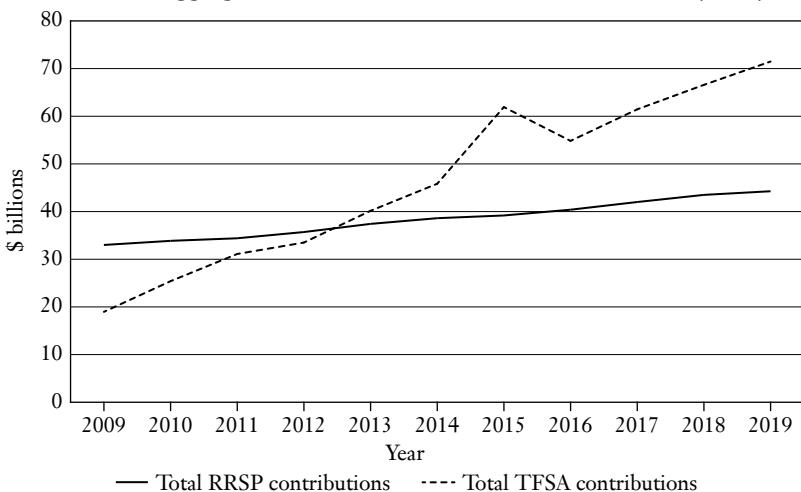
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INTRODUCTION

Canada has two predominant tax-sheltered savings plans: the registered retirement savings plan (RRSP) and the tax-free savings account (TFSA). The RRSP was introduced in 1957 to encourage retirement savings. It can be described as a *tax-deferred* account because contributions receive a tax deduction, whereas withdrawals are taxed. The TFSA, introduced in 2009 and intended to supplement retirement and non-retirement savings, can be described as a *tax-prepaid* account, because contributions are made with after-tax amounts and withdrawals are not taxed.¹ In both plans, investment income is not taxed.

The TFSA has become more popular than the RRSP. As shown by the contribution trends in figure 1, total TFSA contributions have surpassed total RRSP contributions since 2013.

1 Jonathan Kesselman and Finn Poschmann, “Expanding the Recognition of Personal Savings in the Canadian Tax System” (2001) 49:1 *Canadian Tax Journal* 40–101, at 42, describe the RRSP as “tax-deferred” and the TFSA as “tax-prepaid.”

FIGURE 1 Aggregate Annual RRSP and TFSA Contributions, 2009-2019

RRSP = registered retirement savings plan; TFSA = tax-free savings account.

Sources: Aggregate RRSP contributions are from Statistics Canada, table 11-10-0044-01 (formerly table CANSIM 111-0039), “Selected Characteristics of Tax Filers with Registered Retirement Savings Plan (RRSP) Contributions,” April 1, 2022. Aggregate TFSA contributions are from Canada Revenue Agency, “Tax-Free Savings Account Statistics” (www.canada.ca/en/revenue-agency/programs/about-canada-revenue-agency-cra/income-statistics-gst-hst-statistics/tax-free-savings-account-statistics.html).

The disparity between TFSA and RRSP contributions has been increasing over time.² Indeed, Canadian archival research shows that the TFSA has partially crowded out or displaced saving in an RRSP.³ From an economic perspective, saving decisions that will reduce total taxes paid over a lifetime should be based on current and predicted future marginal tax rates. Yet there is empirical evidence that psychological considerations are more important than tax rates for individuals choosing between tax-deferred and tax-prepaid plans.⁴ Consistent with this evidence is the possibility

2 See Alexandre Laurin, *TFSA: Time for a Tune-Up*, C.D. Howe Institute E-Brief (Toronto: C.D. Howe Institute, December 2019).

3 Leslie Berger, Jonathan Farrar, and Lu Zhang, “An Empirical Analysis of the Displacement Effect of TFSAs on RRSPs” (2019) 67:2 *Canadian Tax Journal* 309-33; and Derek Messacar, *Trends in RRSP Contributions and Pre-Retirement Withdrawals, 2000 to 2013*, Statistics Canada catalogue no. 11-626-X, no. 064, February 13, 2017.

4 Andrew D. Cuccia, Marcus M. Doxey, and Shane R. Stinson, “The Impact of Tax Incentive Structure on Taxpayers’ Retirement Savings Decisions” (2022) 44:1 *Journal of the American Taxation Association* 23-47, provide experimental evidence that changes in tax rates do not have an impact on tax-deferred versus tax-prepaid plan preferences unless participants are explicitly educated about the economic effects of tax rates or experimentally prompted with information about rate changes. These findings suggest that typical taxpayers, on their own, are unlikely to consider current versus future marginal tax rates when deciding between tax-sheltered plans.

that displacement of one type of plan by the other may lead to suboptimal savings based on rational economic reasons. Furthermore, a crowding-out effect has public finance implications: substituting short- to intermediate-term savings for long-term savings may increase citizens' financial insecurity in retirement and ultimately increase reliance on public pensions and other government assistance.

In the present study, we investigate whether the choice of a tax-prepaid plan versus a tax-deferred plan may be in part attributable to a psychological bias in the terminology of one of the plan names. That is, some individuals may choose one plan over the other not because of a careful economic consideration of expected versus current marginal tax rates, but because of a favourable heuristic cue ("tax-free") in the plan name. The term "tax-free" appears in the name of the TFSA. This name may not have been carefully constructed: the original name was "tax-prepaid savings plan," but it was changed in the lead-up to the 2008 federal election.⁵

We draw on heuristic-systematic processing theory to guide our investigation.⁶ Heuristics are "simplified decision rules developed to deal with complex situations."⁷ Heuristic-systematic processing theory proposes that individuals have two modes of processing information—heuristic and systematic—which occur concurrently if heuristic cues are present in a judgment setting.⁸ Heuristic processing is a non-analytic orientation to information processing in which people focus on an aspect of information that enables them to use simple decision rules or "mental shortcuts."⁹ By contrast, systematic processing requires the careful scrutiny and analysis of information. Moreover, there can be an interaction effect between both modes such that a heuristic cue suppresses systematic processing if information is ambiguous or extensive.¹⁰

5 "Tax-free savings plan" was the name used by the Liberal government when the introduction of a new option for tax-sheltered savings was initially contemplated. Stewart Lewis, "Tax-Prepaid Savings Plans the New Savings Vehicle?" *Investment Executive*, February 18, 2003 (www.investmentexecutive.com/news/research-and-markets/tax-prepaid-savings-plans-the-new-savings-vehicle). The change to "tax-free savings account" was made by the Conservative Party at a time when it was seeking re-election. The timing of the name change was discussed in a telephone conversation between one of the authors and a senior director at the Department of Finance in April 2022.

6 Shelly Chaiken, Akiva Liberman, and Alice H. Eagly, "Heuristic and Systematic Information Processing Within and Beyond the Persuasion Context," in James Uleman and John Bargh, eds., *Unintended Thought* (New York: Guilford Press, 1989), 212–52.

7 Robert Libby, Robert Bloomfield, and Mark W. Nelson, "Experimental Research in Financial Accounting" (2002) 27:8 *Accounting, Organizations and Society* 775–810, at 778.

8 Chaiken et al., *supra* note 6; and Richard E. Petty and John T. Cacioppo, "The Elaboration Likelihood Model of Persuasion" (1986) 19:1 *Advances in Experimental Social Psychology* 123–205 ([https://doi.org/10.1016/S0065-2601\(08\)60214-2](https://doi.org/10.1016/S0065-2601(08)60214-2)).

9 Amos Tversky and Daniel Kahneman, "Judgment Under Uncertainty: Heuristics and Biases" (1974) 185:4157 *Science* 1124–31.

10 See Shelly Chaiken and Durairaj Maheswaran, "Heuristic Processing Can Bias Systematic Processing: Effects of Source Credibility, Argument Ambiguity, and Task Importance on

A tax-aversion heuristic occurs where people react negatively to something labelled as a “tax” or positively to something labelled as “tax-free.”¹¹ We expect this heuristic to affect individuals’ saving choices between tax-sheltered plans in Canada, since research shows that, generally, people have a poor understanding of concepts such as marginal tax rates and tax deductions, and therefore may be inclined to use the plan name to guide their saving choices.¹² Thus, we hypothesize that, all else being equal, individuals will be more likely to choose a tax-sheltered savings plan that contains a favourable heuristic cue, “tax-free,” in its name than a plan that does not.

We conduct three related experiments to test this hypothesis. These are “small stakes” experiments, common in social psychology research, which are designed to build on each other and provide convergent evidence of a phenomenon under investigation.¹³

Our investigation takes place in a Canadian context, since Canada is one of only a few countries with both a tax-deferred plan (the RRSP) and a tax-prepaid plan (the TFSA). As well, only one of the Canadian plan names contains a favourable heuristic cue, providing a natural laboratory in which to test our hypothesis. The two other countries with these pairs of plans—the United Kingdom and the United States—do not include heuristic cues in the names of their plans.¹⁴

Attitude Judgment” (1994) 66:3 *Journal of Personality and Social Psychology* 460–73; Gerd Bohner, Gordon B. Moskowitz, and Shelly Chaiken, “The Interplay of Heuristic and Systematic Processing of Social Information” (1995) 6:1 *European Review of Social Psychology* 33–68 (<https://doi.org/10.1080/1479277944300003>); Serena Chen and Shelly Chaiken, “The Heuristic-Systematic Model in Its Broader Context,” in Shelly Chaiken and Yaacov Trope, eds., *Dual-Process Theories in Social Psychology* (New York: Guilford, 1999), 73–96; and Alexander Todorov, Shelly Chaiken, and Marlone Henderson, “The Heuristic-Systematic Model of Social Information Processing,” in James Price Dillard and Michael Pfau, eds., *The Persuasion Handbook: Developments in Theory and Practice* (New York: Sage, 2002), 195–211.

11 Edward J. McCaffery and Jonathan Baron, “Thinking About Tax” (2006) 12:1 *Psychology, Public Policy, and Law* 106–35.

12 Survey evidence of tax illiteracy in Canada is documented by Anthony Pham, Antoine Genest-Grégoire, Luc Godbout, and Jean-Herman Guay, “Tax Literacy: A Canadian Perspective” (2020) 68:4 *Canadian Tax Journal* 987–1007. Of note is the finding that relatively complex concepts such as marginal tax rates are not well understood by Canadians.

13 See Thomas Cook and Carla Groom, “The Methodological Assumptions of Social Psychology,” in Carol Sansone, Carolyn C. Morf, and A.T. Panter, eds., *Handbook of Methods in Social Psychology* (Thousand Oaks, CA: Sage, 2004), 19–44, who discuss the propriety of “small stakes” experiments in a multi-study article. Specifically, Cook and Groom note that this type of multi-study investigation has the goal of achieving some form of replication while also extending the theory under investigation by examining more of its implications (*ibid.*, at 28).

14 In the United States, the tax-deferred plan is the individual retirement account (IRA), introduced in 1974, and the tax-prepaid plan is the Roth IRA, introduced in 1998. In the United Kingdom, the tax-deferred plan is the self-invested personal pension (SIPP), introduced in 1990, and the tax-prepaid plan is the individual savings account (ISA), introduced in 1999.

In our first experiment (study 1a), participants were given the option of contributing to one of two tax-sheltered savings plans: the “retirement savings account” (which parallels the RRSP) and the “tax-free account” (which parallels the TFSA). These names were adapted and shortened from the names of the actual plans so that each name contained three words and the same identifier (“account”). Each plan name was accompanied by a short description of the plan. Providing the plan names, one of which contained the “tax-free” heuristic cue, along with a description of each plan, allowed participants to engage in heuristic processing and systematic processing simultaneously. Participants were randomly assigned to one of two conditions. In one condition, the “tax-free account” name was matched with the tax-prepaid description, and the “retirement savings account” name was matched with the tax-deferred description (the accurate condition in the Canadian context). In the other condition, the account names were mismatched with the descriptions (the inaccurate condition in the Canadian context). We find that, when the tax-deferred plan name includes “tax-free,” significantly more participants choose that plan compared to the number making that choice when there is no “tax-free” label in the name, consistent with the prediction that a tax-aversion heuristic associated with the plan name may prevail over systematic processing of the plan description. Repeating this exercise with participants in the United Kingdom (study 1b) produced consistent results, suggesting that our findings generalize broadly.

In study 2, we explored participants’ saving choices when more information about each plan was provided, as is likely to happen in actual saving decision contexts. Participants were asked to choose between two savings plans, as in the prior studies; however, in addition to the accuracy variable, we also manipulated a second variable, description length. The accuracy variable was the same as in studies 1a and 1b, where the descriptions provided correctly matched the plan name (accurate) or the descriptions provided did not match the plan name (inaccurate) in the Canadian context. To manipulate description length, participants were provided with either a brief (short) or a detailed (long) description of each plan.¹⁵ We find that participants are more likely to choose a savings plan if it is named “tax-free account” rather than “retirement savings account” regardless of the length of the plan description. Furthermore, a larger proportion of participants base their decision on “tax-free” in the plan name when they are provided with the long description, particularly participants who consider themselves to be less financially savvy and are less likely to engage in effortful thinking. These findings further support our hypothesis that heuristic information processing dominates systematic processing in the presence of a heuristic cue, and does so even more when individuals are challenged to engage in systematic processing.

Together, our results provide robust evidence that a favourable heuristic cue (“tax-free”) embedded in the name of a tax-sheltered savings plan affects individuals’ saving choices. Consistent with the heuristic-systematic model of information

¹⁵ The brief descriptions contained approximately 35 words, and the detailed descriptions contained approximately 120 words.

processing, when individuals find an accessible and favourable heuristic in a plan name, they are likely to use that heuristic to guide their saving choice, rather than scrutinize descriptive information about that plan.

Our research contributes to the behavioural tax literature by showing that a tax-aversion heuristic in a tax-sheltered savings plan significantly affects individuals' saving decisions. We are not aware of prior studies on this subject. Existing behavioural tax literature has considered

- how consumers' purchasing decisions are affected by prices that include or do not include taxes;¹⁶
- how individuals' memory about the spending of an income tax rebate varies if the rebate is described as returned income or as additional income;¹⁷
- how taxpayers respond to taxes framed using dollar amounts versus percentages;¹⁸
- how individuals respond to a municipal levy labelled as a “tax” versus a “payment”;¹⁹
- how individuals respond to environmental costs labelled as a “tax” versus an “offset”;²⁰
- how individuals' contributions to tax-deferred savings plans may be motivated by the desire to offset taxes otherwise owing;²¹ and

16 Raj Chetty, Adam Looney, and Kory Kroft, “Salience and Taxation: Theory and Evidence” (2009) 99:4 *American Economic Review* 1145–77, find a decrease in consumer demand when price tags include taxes compared to when they do not, and when posted prices include taxes compared to when taxes are applied at a cash register. Cynthia Blanthorne and Michael L. Roberts, “Cognitive Responses to Partitioned Pricing of Consumption Taxes: Consequences for State and Local Tax Revenues” (2015) 37:1 *Journal of the American Taxation Association* 183–204 (<https://doi.org/10.2308/atax-50953>), find that consumer demand decreases when an add-on tax is a sales tax versus an excise tax included in the overall price.

17 Nicholas Epley, Dennis Mak, and Lorraine Chen Idson, “Bonus or Rebate? The Impact of Income Framing on Spending and Saving” (2006) 19:3 *Journal of Behavioral Decision Making* 213–27, find that participants recall spending more of their rebate in the bonus condition (additional income) than in the rebate condition (returned income).

18 McCaffery and Baron, *supra* note 11, at 117, find that participants perceive progressive taxation when taxes appear as percentages but not when they are expressed in dollar amounts.

19 McCaffery and Baron, *ibid.*, find that participants react much more strongly and negatively to levies labelled as a “tax” rather than a “payment.”

20 David J. Hardisty, Eric J. Johnson, and Elke U. Weber, “A Dirty Word or a Dirty World? Attribute Framing, Political Affiliation, and Query Theory” (2010) 21:1 *Psychological Science* 86–92, find that participants prefer charges for environmental costs that are labelled as an “offset” rather than a “tax.”

21 Derek Messacar, *Loss-Averse Tax Manipulation and Tax-Preferred Savings*, Working Paper no. 8 (Montreal: HEC Montreal, Retirement and Savings Institute, February 2022), at 3, finds that Canadian taxpayers contribute to tax-deferred RRSPs during tax season to push down the balance of their tax liabilities at the end of the year toward zero, consistent with a loss-aversion explanation.

- how individuals respond to a choice between avoiding taxes and avoiding equivalent or larger monetary costs unrelated to taxes.²²

Our research provides new evidence on how taxpayers' saving decisions may be biased owing to a tax-aversion heuristic. These saving decisions may have long-term implications for individuals' retirement and personal finance decisions.

We also contribute to the literature on how individuals choose between tax-sheltered savings plans. Prior studies have shown that the difference in marginal income tax rates at the time of contribution and the time of withdrawal is the main economic factor determining the optimal choice between the US tax-prepaid and tax-deferred savings plans.²³ Recent behavioural research finds that individuals frequently fail to understand the tax implications of tax-sheltered savings, and that this leads to suboptimal savings.²⁴ Our study adds to this research stream by showing that a tax-aversion heuristic in the plan name is a factor that can influence saving choices between tax-deferred and tax-prepaid plans.

Our findings have direct policy implications. When choosing the name for a tax-sheltered savings plan, governments should avoid plan names that contain a heuristic cue, whether favourable or unfavourable, because such a cue may bias individuals' saving decisions and impede the achievement of tax policy objectives. Providing more

22 Abigail B. Sussman and Christopher Y. Olivola, "Axe the Tax: Taxes Are Disliked More Than Equivalent Costs" (2011) 48, supplement *Journal of Marketing Research* S91-101, provide experimental evidence that individuals have stronger preferences to avoid taxes than to avoid equal or larger monetary costs unrelated to taxes.

23 For example, Leonard Burman, William Gale, and David Weiner, "The Taxation of Retirement Saving: Choosing Between Front-Loaded and Back-Loaded Options" (2001) 54:3 *National Tax Journal* 689-702, calculate marginal tax rates for a sample of taxpayers between 1982 and 1995, and show that the average effective tax rate declined by about 11 percent for taxpayers who contributed to an IRA. Warren B. Hrung, "Determinants of the Choice Between Roth and Deductible IRAs" (2007) 29:1 *Journal of the American Taxation Association* 27-42, finds some evidence that higher current tax rates relative to average tax rates are positively associated with the likelihood that a taxpayer will contribute to a tax-deferred plan (an IRA) rather than a tax-prepaid plan (a Roth IRA). In addition, he finds that taxpayers with greater liquidity are more likely to contribute to a Roth IRA, which has a higher contribution limit.

24 John Beshears, James J. Choi, David Laibson, and Brigitte C. Madrian, "Does Front-Loading Taxation Increase Savings? Evidence from Roth 401(k) Introductions" (2017) 151 *Journal of Public Economics* 84-95 (<https://doi.org/10.1016/j.jpubeco.2015.09.007>), use employee-level data in 11 companies to show that adding a Roth (tax-prepaid) savings option to existing 401(k) plans does not affect 401(k) contribution rates. Beshears et al. attribute this result in part to employee confusion. Shane R. Stinson, Marcus M. Doxey, and Timothy J. Rupert, "The Effects of Income Tax Timing on Retirement Investment Decisions" (2021) 96:2 *Accounting Review* 435-63 (<https://doi.org/10.2308/TAR-2016-0379>), show that tax-deferred plan holders estimate lower future tax burdens and overestimate their future wealth relative to tax-prepaid plan holders. Cuccia et al., *supra* note 4, find that individuals' existing attitudes are a much more important influence on the choice between tax-deferred and tax-prepaid plans than economic considerations.

information about the nature of the tax-sheltered savings plan may not be effective in overcoming a heuristic bias. Financial education and financial advice may help individuals to use these plans to their full economic potential.

In the next section of this article, we discuss the heuristic-systematic model of information processing in more detail and develop our theoretical prediction. Then, for each experiment, we explain our methodology and present the results. We conclude with a discussion of the implications of our findings.

THEORY AND HYPOTHESIS

Misconceptions About Taxes and Tax Aversion

Research establishes that individuals often have misconceptions about taxes. Blaufus, Chirvi, Huber, Maiterth, and Sureth-Sloane²⁵ reviewed 128 studies related to income taxes, wealth taxes, and excise taxes. They concluded that individuals in different countries exhibit substantial tax misconceptions: objective tax information is often misperceived, leading to decisions that deviate from rational choice predictions. Other studies find that tax framing affects people's consumption and saving decisions. For example, Shapiro and Slemrod²⁶ find that people are more likely to save a tax refund received as a lump sum than the same amount received in monthly instalments. Epley, Mak, and Idson²⁷ find that whether people save or spend a tax windfall depends on whether the windfall is described as a “rebate” or a “bonus”; and Chetty, Looney, and Kroft²⁸ find reduced consumption when taxes are included in posted prices rather than added to the bill at the register.

Tax complexity can also lead to tax misconception. In an experimental setting, Rupert and Wright²⁹ find that explicit identification of an individual's marginal tax rate reduces decision errors in the choice between a taxable and a non-taxable savings account. Boylan and Frischmann³⁰ show that complexity in determining personal marginal tax rates leads to errors in making personal investment decisions. Blaufus

25 Kay Blaufus, Malte Chirvi, Hans-Peter Huber, Ralf Maiterth, and Caren Sureth-Sloane, “Tax Misperception and Its Effects on Decision Making—Literature Review and Behavioral Taxpayer Response Model” (2022) 31:1 *European Accounting Review* 111–44.

26 Matthew D. Shapiro and Joel Slemrod, “Consumer Response to Tax Rebates” (2003) 93:1 *American Economic Review* 381–96.

27 Epley et al., *supra* note 17.

28 Chetty et al., *supra* note 16.

29 Timothy J. Rupert and Arnold M. Wright, “The Use of Marginal Tax Rates in Decision Making: The Impact of Tax Rate Visibility” (1998) 20:2 *Journal of the American Taxation Association* 83–99.

30 Scott J. Boylan and Peter J. Frischmann, “Experimental Evidence on the Role of Tax Complexity in Investment Decisions” (2006) 28:2 *Journal of the American Taxation Association* 69–88 (<https://doi.org/10.2308/jata.2006.28.2.69>).

and Ortlieb³¹ provide evidence that with high tax complexity, individuals base their saving decisions on their pre-tax returns rather than their after-tax returns. Our investigation of the tax-aversion heuristic adds to the literature on how tax misconceptions influence saving behaviours.

Individuals' aversion to the word "tax" has been established in a small but growing literature in psychology and behavioural economics. McCaffery and Baron³² find that people are more willing to pay for public services if those services are labelled as a "fee" rather than a "tax." Hardisty, Johnson, and Weber³³ find stronger voter support for a policy labelled as a "carbon offset" than for a "carbon tax." Kessler and Norton³⁴ find that participants are less likely to reduce their willingness to work when a wage reduction is labelled as a "pay cut" rather than a "tax." Sussman and Olivola³⁵ show that people will go to greater lengths to avoid taxes than to avoid equal or larger monetary costs that are not taxes. There is also psychological research identifying characteristics of taxes that may explain a general negative attitude toward them. This research shows that the pain of paying taxes can be felt immediately even if the timing of tax payments is distant or uncertain, and that the disconnect between tax payments and receipt of tax-funded services can cause taxes to feel like a loss.³⁶ This stream of literature suggests that aversion to the word "tax" is likely to play a role in tax-sheltered saving choices.

Tax-Aversion Heuristic Cues and Saving Decisions

Chaiken, Giner-Sorolla, and Chen note that "[s]ocial psychologists have long realized that people process information in more than one way."³⁷ The heuristic-systematic model of information processing proposes two basic modes of processing by which social judgments can be made. Heuristic processing, first identified by the economists Amos Tversky and Daniel Kahneman,³⁸ involves the use of basic rules or schemas,

31 Kay Blaufus and Renate Ortlieb, "Is Simple Better? A Conjoint Analysis of the Effects of Tax Complexity on Employee Preferences Concerning Company Pension Plans" (2009) 61 *Schmalenbach Business Review* 60-83.

32 McCaffery and Baron, *supra* note 11.

33 Hardisty et al., *supra* note 20.

34 Judd B. Kessler and Michael I. Norton, "Tax Aversion in Labor Supply" (2016) 124 *Journal of Economic Behavior & Organization* 15-28, at 16.

35 Sussman and Olivola, *supra* note 22.

36 See Yaacov Trope and Nira Liberman, "Construal-Level Theory of Psychological Distance" (2010) 117:2 *Psychological Review* 440-63 (erratum in *Psychological Review* (2010) 117:3, at 1024); and Drazen Prelec and George Loewenstein, "The Red and the Black: Mental Accounting of Savings and Debt" (1998) 17:1 *Marketing Science* 4-28.

37 Shelly Chaiken, Roger Giner-Sorolla, and Serena Chen, "Beyond Accuracy: Defense and Impression Motives in Heuristic and Systematic Information Processing," in Peter M. Gollwitzer and John A. Bargh, eds., *The Psychology of Action: Linking Cognition and Motivation to Behavior* (New York: Guilford, 1996), 553-78, at 553.

38 Tversky and Kahneman, *supra* note 9.

or prior knowledge (heuristics), to make judgments and decisions. A heuristic is a mental shortcut that requires little cognitive effort and entails minimal information processing. The second mode of processing, systematic processing, is effortful and requires relatively comprehensive and analytical scrutiny of judgment-relevant information.³⁹

Although either type of information processing may occur alone, heuristic and systematic modes of processing may also occur concurrently. Concurrent processing modes will operate when there is a heuristic cue available. Both modes can interact such that the implications of one mode bias the nature of the other.⁴⁰ An interaction effect is expected if the available content of information is ambiguous or extensive, since heuristic cues can lead individuals to form expectations about the strength or attractiveness of information content. More specifically, a heuristic that is favourable can lead someone to interpret ambiguous or extensive information more favourably because the favourable cue establishes the expectation of encountering positive information.⁴¹ Since heuristic processing dominates where the motivation or ability to scrutinize information is low, in a context where there is relatively complicated or unfamiliar information requiring systematic processing and where a heuristic cue is present, the heuristic cue is expected to dominate over individuals' motivation to process information systematically.⁴² In other words, when dealing with complex or unfamiliar information, individuals are more likely to rely on heuristic cues to make a decision than on careful reasoning and assessment.

In a tax-sheltered savings context, we suggest that a typical individual will have to engage in effortful thinking to understand the tax implications of his or her saving decisions, especially if there are multiple tax-sheltered savings plans from which to choose. Indeed, understanding concepts such as tax deductions, taxes on withdrawals, the timing of tax deductions and withdrawals, and marginal tax rates at the time of contribution versus expected marginal tax rates at the time of withdrawal, requires both specific knowledge and systematic processing. If an individual were provided with the opportunity to engage in effortful thinking about tax-sheltered savings and concurrently provided with a heuristic cue, the above literature predicts an interaction effect such that the heuristic cue would dominate any systematic processing.

The term “tax-free” is expected to be a heuristic cue that is desirable to individuals, owing to the above research showing the widespread negative bias associated

39 Chen and Chaiken, *supra* note 10; and Todorov et al., *supra* note 10.

40 In the heuristic-systematic model literature, this type of interaction effect is known as a “bias hypothesis.”

41 See Serena Chen, David Shechter, and Shelly Chaiken, “Getting at the Truth or Getting Along: Accuracy- Versus Impression-Motivated Heuristic and Systematic Processing” (1996) 71:2 *Journal of Personality and Social Psychology* 262-75. In our setting, regardless of the type of tax-sheltered plan, ambiguity could arise because investment income accumulates tax-free. Thus, it may be unclear why a plan has a “tax-free” label if savings may be taxable at the time of contribution, after contribution but before withdrawal, or at withdrawal.

42 See Bohner et al., *supra* note 10.

with the word “tax.”⁴³ Something labelled as “tax-free” would alleviate the pejorative association with taxes. We thus expect that the term “tax-free” will be a positive signal for individuals and is likely to be used as a heuristic cue in decision making. The above discussion leads to the following hypothesis:

Hypothesis: All else being equal, individuals will be more likely to choose a particular tax-sheltered savings plan when its name contains “tax-free” as a favourable heuristic cue.

EXPERIMENTS

To test our hypothesis, we conduct three experiments. We operationalize our study using plan names from the Canadian context. Canada is one of a few countries that offer both tax-deferred and tax-prepaid savings plans. The Canadian plans provide an ideal context for testing our hypothesis because the name of the tax-deferred plan does not contain a heuristic about taxes, whereas the name of the tax-prepaid plan does (“tax-free”). As discussed above, this heuristic is considered to be favourable. Since the names of the two plans differ (registered retirement savings plan and tax-free savings account, respectively), and because we want to limit our focus to their possible heuristic effects, instead of the actual plan names we use the labels “retirement savings account” and “tax-free account” in our study.

In our experiments, participants are asked to choose a tax-sheltered savings plan and are given two plan names (retirement savings account and tax-free account) with corresponding descriptions. Providing both the plan names and descriptions of the plans allows the participants to engage in both heuristic and systematic processing. The plan names are either correctly or incorrectly matched with the descriptions, which are based on the descriptions of the actual Canadian tax-sheltered savings plans. Each experimental study, along with the results, is described in detail below.

Study 1a

The purpose of our first study is to establish that when individuals are presented with a choice between a tax-sheltered savings plan with a name containing a favourable heuristic cue and a tax-sheltered savings plan without a favourable heuristic cue in the name, they are more likely to choose the plan with the favourable heuristic cue.

⁴³ There is also public opinion research in the United States supporting the bias against paying income taxes. Karlyn Bowman and Andrew Rugg compiled a summary of public opinion tax research in the United States from 1937 to 2012 and concluded, “In seventy-five years of surveys, we can find no instance in which more than a tiny percentage of Americans said the amount they paid in taxes was too low.” Karlyn Bowman and Andrew Rugg, *Public Opinion on Taxes: 1937 to Today* (Washington, DC: American Enterprise Institute for Public Policy Research, April 2012), at 128 (www.aei.org/wp-content/uploads/2012/04/-aei-public-opinion-study-on-taxes-2012_082833686158.pdf).

Experimental Design and Procedures

The experiment utilizes a 2×1 between-participants design. We manipulated the match between short descriptions of two tax-sheltered plans (one being a tax-deferred plan and the other a tax-prepaid plan) and the plan names. In one condition, the descriptions matched the plan names (the accurate condition). In the other condition, the descriptions did not match the plan names (the inaccurate condition). This design allows us to observe whether individuals’ saving choices are influenced by the name of the tax-sheltered savings account (that is, by the favourable heuristic cue) or by the nature of the account as described.

Participants were randomly assigned to an experimental condition and began the study by reading a brief statement asking them to imagine that they have \$10,000 in their chequing account and that their bank is offering new savings products. Participants were then provided with the details of the two tax-sheltered savings plans and asked to select the one in which they wanted to save their funds. After they had indicated their choice, participants were asked to explain their reasoning and to self-assess their expertise relating to tax-sheltered accounts, before answering standard demographic questions pertaining to gender, age, income, native language, and country of residence.

Independent and Dependent Variables

The independent variable is the match between the tax-sheltered savings plan descriptions and the plan names. In the accurate condition, a short description of a tax-prepaid plan was matched with the tax-free account name, and a short description of a tax-deferred plan was matched with the retirement savings account name. The description of the tax-prepaid plan (the tax-free account) read, “You will not pay taxes on the investment income accumulated in the account. You will not receive a tax refund when you make a deposit. Also, you will not pay tax when you make a withdrawal.” The description of the tax-deferred plan (the retirement savings account) read, “You will not pay taxes on the investment income accumulated in the account. You will receive a tax refund when you make a deposit. Also, you will pay tax when you make a withdrawal.”⁴⁴ In the inaccurate condition, the match between the plan names and the

44 We discuss the derivation of this description under “Study 2” below. The “tax refund” language is an experimental design choice to contrast the two accounts, since it is not possible to obtain a tax refund by contributing to a TFSA but it is possible to obtain a tax refund by contributing to an RRSP. In reality, a contribution to a tax-deferred plan results in a tax deduction, which would either increase a refund or decrease an amount due. Thus, a tax refund is not assured by making a contribution to a tax-deferred plan. A contribution to a tax-prepaid plan would not create a tax deduction and thus would not change the amount of taxes owed. For the purposes of the experiments, we sacrificed some technical realism for tax language that we thought an average taxpayer would understand and could relate to; prior tax research by Beshears et al. (supra note 24) and Pham et al. (supra note 12) shows that typical taxpayers are easily confused by technical information referring, for example, to marginal tax rates and deductions. If we were to find support for our hypothesis using relatively simple language, that

descriptions was switched. Thus, each participant read about two savings plans, one called “tax-free account” and the other called “retirement savings account,” but the descriptions under each name were either accurate or inaccurate. The order in which the options were presented to participants was randomized.

The dependent variable was binary. Respondents were asked, “Which account would you choose?” when the choice was between the tax-free account (accompanied by a short description) and the retirement savings account (accompanied by a short description). The text of the descriptions provided in both experimental conditions is reproduced in table 1.

Participants

We recruited 650 adult Canadian participants. By gender, 46.9 percent of the sample self-identified as male, 52.3 percent as female, and 0.8 percent as non-binary. The age of the sample ranged between 18 and 93 years. The mean age of the sample was 51.5 years. At the conclusion of the survey, we asked participants to self-report their level of expertise on the subject of financial products by marking their choice on a five-point scale, where 1 = “no expertise” and 5 = “I am an expert.” The mean score was 2.82, and only 37 participants chose 5, suggesting that our sample did not contain a significant number of participants who considered themselves financially savvy regarding tax-sheltered savings plans.⁴⁵ Participants were recruited through a consumer research firm (Dynata) and awarded points for completing “a survey about savings choices.” Participants were randomly selected from the firm’s database of Canadians from all provinces and territories, using an equal male/female split and a minimum age of 18. Seventy-four percent of the sample was aged 65 or under, and 96.1 percent of the sample was aged 80 or under. All participants had to correctly answer three simple mathematical computation screening questions before proceeding.⁴⁶

Results

Panel A of table 2 summarizes the results of study 1a. Figure 2 graphs these results. In the accurate condition, 76.0 percent of participants (247 of 325) preferred the plan labelled “tax-free account” (paired with the accurate tax-prepaid account description). However, in the inaccurate condition, 63.1 percent of participants (205

finding would arguably be stronger if we had used more technically accurate language. Finally, we note that it is not uncommon to find media sources promoting a tax refund if someone makes an RRSP contribution; see, for example, Money After Graduation, “Using Your RRSP Contributions To Maximize Your Tax Refund” (www.moneyaftergraduation.com/maximizing-income-tax-refund-rrsp-contributions/#h-using-your-rrsp-contributions-to-maximize-your-tax-refund). Thus, we expect that, in general, taxpayers would associate an RRSP contribution with a tax refund.

45 In the study, 74.9 percent of the sample answered this question by selecting 1, 2, or 3.

46 This screening procedure was followed for all experiments and is a common practice in experimental research to ensure that participants are paying attention.

TABLE 1 Short Descriptions of Plans Provided to Study Participants

Accurate wording	Inaccurate wording
Which account would you choose?	
<p>Tax-free account: You will not pay taxes on the investment income accumulated in the account. You will not receive a tax refund when you make a deposit. Also, you will not pay tax when you make a withdrawal.</p>	<p>Retirement savings account: You will not pay taxes on the investment income accumulated in the account. You will receive a tax refund when you make a deposit. Also, you will pay tax when you make a withdrawal.</p>
<p>Retirement savings account: You will not pay taxes on the investment income accumulated in the account. You will not receive a tax refund when you make a deposit. Also, you will not pay tax when you make a withdrawal.</p>	<p>Tax-free account: You will not pay taxes on the investment income accumulated in the account. You will receive a tax refund when you make a deposit. Also, you will pay tax when you make a withdrawal.</p>

of 325) preferred the plan labelled “retirement savings account” (paired with the inaccurate tax-deferred description). Taken together, participants showed a preference for the tax-prepaid plan description over the tax-deferred plan description.⁴⁷ A chi-squared goodness-of-fit test indicates that the likelihood that participants would choose the tax-prepaid plan over the tax-deferred plan is significantly higher across experimental conditions ($\chi^2 = 100.94, p < 0.01$).⁴⁸

We hypothesize that, all else being equal, individuals will be more likely to choose a tax-sheltered plan when its name contains “tax-free” as a favourable heuristic cue. To directly test our hypothesis, we compare the participants’ responses when the same tax-deferred account description is paired with the tax-free (inaccurate condition) and the retirement savings (accurate condition) account name. Differences in participant preferences between the conditions suggest that their saving decisions are influenced by the favourable heuristic cue of the tax-free name rather than the content of the account description.

As shown in panel A of table 2, the proportion of participants who chose the tax-free account when reading the tax-deferred account description (the inaccurate condition)

47 The general preference of Canadians for tax-free, tax-prepaid accounts relative to retirement-based, tax-deferred accounts is consistent with prior research (Berger et al., *supra* note 3).

48 Throughout this article, we report chi-squared values and one-tailed *p*-values with a Yates’ correction, which is a more conservative result than that without a Yates’ correction (Robert H. Riffenburgh, *Statistics in Medicine*, 2d ed. (Burlington, MA: Elsevier, 2006)). As described in Yadolah Dodge, ed., *The Oxford Dictionary of Statistical Terms* (New York: Oxford University Press, 2003), at 435, “[t]he general effect of a Yates’ correction is to bring the distribution based on discontinuous frequencies nearing to the continuous χ^2 distribution from which the published tables for testing χ^2 are derived.”

TABLE 2 Cross-Tab Summary, Study 1a

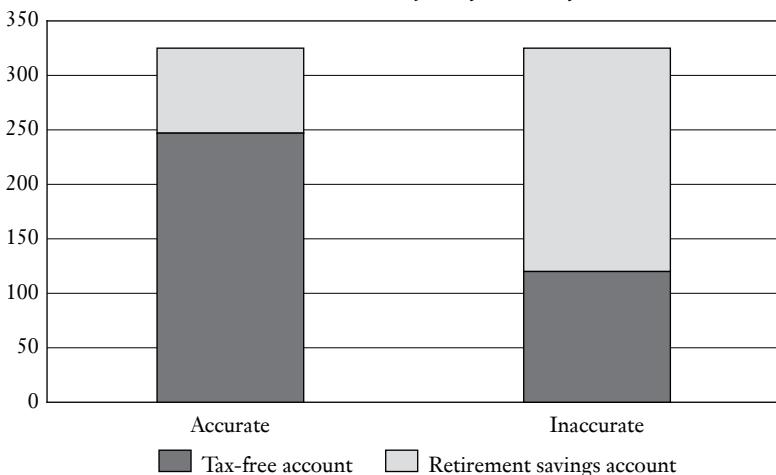
Panel A Choice frequencies by experimental condition					
	Accurate description		Inaccurate description		
	Frequency count	Percentage	Frequency count	Percentage	
Tax-free account	247	76.0	120	36.9	
Retirement savings account	78	24.0	205	63.1	
Total	325	100.0	325	100.0	

Panel B Choice frequencies by level of financial expertise					
	Accurate description		Inaccurate description		
	Frequency count	Percentage	Frequency count	Percentage	
Low financial expertise (< 3 on 5-point scale)					
Tax-free account	88	81.5	35	29.2	
Retirement savings account	20	18.5	85	70.8	
Total	108	100.0	120	100.0	
High financial expertise (> 3 on 5-point scale)					
Tax-free account	159	73.3	85	41.5	
Retirement savings account	58	26.7	120	58.5	
Total	217	100.0	205	100.0	

(36.9 percent) is greater than the proportion of participants who chose the retirement savings account when reading the same description (the accurate condition). A chi-squared goodness-of-fit test suggests that the former proportion is significantly higher than the latter ($\chi^2 = 6.427, p < 0.01$). These findings support our hypothesis, since the incremental difference in choice likelihood is attributable to the account names.

We used two post-experimental measures to provide additional evidence that participants' preferences were influenced by the tax-free account name. First, given that heuristic processing will dominate where the ability to scrutinize information is low, we examined whether there was a link between financial expertise and the extent to which participants' choices were influenced by the favourable heuristic cue. Second, we measured participants' assessment of the most influential factor in their investment decision making, to provide greater insights into the cognitive process that led to their choices. Specifically, we wanted to confirm that it was a preference for a "tax-free" plan, and not the desire to avoid an account name related to retirement, that was motivating a participant's choice.

We also assess whether differences in self-reported financial expertise may affect the extent to which the favourable heuristic cue may dominate participants' motivation

FIGURE 2 Choice Frequency for Study 1a

to process the technical plan description. To measure participants' financial expertise, we asked, "How much expertise do you have on the subject of financial products?" and provided five possible choices, where 1 = "no expertise" and 5 = "I am an expert." We split participants into two groups based on the median level of financial expertise (3). Panel B of table 2 groups the number of participants who chose each account name according to their self-reported level of financial expertise. For the low financial expertise group, the tax-deferred plan in the inaccurate condition (paired with the name tax-free) was selected by participants significantly more frequently (29.2 percent) than the tax-deferred plan in the accurate condition (paired with the name retirement savings) (18.5 percent) ($\chi^2 = 3.52, p = 0.030$). For the high financial expertise group, we observe a similar pattern: the tax-deferred plan in the inaccurate condition (paired with the name tax-free) was also selected by participants significantly more frequently (41.5 percent) than the tax-deferred plan in the accurate condition (paired with the name retirement savings) (26.7 percent) ($\chi^2 = 10.22, p < 0.01$). These findings suggest that participants revert to heuristic processing based on the tax-free name regardless of their self-declared financial expertise.

To identify the factor that participants considered most influential in their investment decision, we asked them to choose one of six possible options: (1) I like the idea of "tax-free"; (2) I don't like the idea of "tax-free"; (3) I like the idea of "retirement savings"; (4) I don't like the idea of "retirement savings"; (5) I carefully read the description of each account and weighed the relative pros and cons of each; and (6) other.

Panel A of table 3 reports the frequencies of participants' responses. Consistent with the notion of the heuristic bias, we observe that 285 participants identified "I like the idea of 'tax-free'" as the most influential factor in their decision. Of these participants, and as shown in panel B of table 3, the tax-deferred plan in the inaccurate

TABLE 3 Analysis of Most Influential Factor, Study 1a

Panel A Frequency of most influential factor				
Plan name	Frequency count	Percentage	Frequency count	Percentage
1. I like the idea of “tax-free”		n = 285 (43.9%)		
2. I don’t like the idea of “tax-free”		n = 0		
3. I like the idea of “retirement savings”		n = 77 (11.8%)		
4. I don’t like the idea of “retirement savings”		n = 22 (3.4%)		
5. I carefully read the description of each account and weighed the relative pros and cons of each		n = 246 (37.8%)		
6. Other		n = 20 (3.1%)		
		Total n = 650		
Panel B Analysis of the most influential factor				
Plan name	Accurate description	Inaccurate description	Frequency count	Percentage
Most influential factor: “I like the idea of tax-free”				
Tax-free account	132	89.8	72	52.2
Retirement savings account	15	10.2	66	47.8
Total	147	100.0	138	100.0
Most influential factor: “I carefully weighed my options”				
Tax-free account	90	80.4	37	27.6
Retirement savings account	22	19.6	97	72.4
Total	112	100.0	134	100.0

condition (paired with the name tax-free) was selected significantly more frequently (52.2 percent) than the tax-deferred plan in the accurate condition (paired with the name retirement savings) (10.2 percent) ($\chi^2 = 10.291, p < 0.01$). Moreover, participants who noted that the most influential factor in their decision was “I carefully read the description of each account and weighed the relative pros and cons of each” did not show evidence of a heuristic bias, since there was no significant difference between the accurate (19.6 percent) and inaccurate (27.6 percent) conditions in their preference for the tax-deferred plan ($\chi^2 = 0.194, p = 0.33$). Finally, only 22 participants (3.4 percent) indicated that the most influential factor in their decision was “I don’t like the idea of ‘retirement savings’.” This evidence suggests that our results reflected a desire to avoid taxes rather than a desire to avoid thinking about retirement. No one in the sample chose “I don’t like the idea of ‘tax-free’” as their most influential factor.

Taken together, our results provide evidence that when faced with a tax-sheltered savings decision, individuals’ judgments can be influenced by a favourable heuristic cue such that they tend to choose the savings plan whose name suggests a more desirable name, regardless of the plan description.

Robustness Analysis

We conduct a logistic regression analysis to test the robustness of the main results. The dependent variable is a binary variable equal to 1 if a participant chose the tax-prepaid account and 0 if a participant chose the tax-deferred account. The main independent variable of interest is also a binary variable, indicating the accurate/inaccurate condition. Demographic variables, including financial expertise, income, age, gender, and native language, are controlled for in the regressions. Table 4 reports the marginal effects of each variable while holding all other variables at the mean. As expected, the accurate condition significantly ($p < 0.01$) influences the participants' preference for the tax-prepaid plan. The coefficient of the accurate condition indicates that, for two otherwise average participants (in terms of financial expertise, income, gender, and native language), the one being presented with the accurate condition (the tax-free account name) has a 12.8 percent higher probability of choosing the tax-prepaid account than the one being presented with the inaccurate condition (the retirement savings account name).

Among the demographic variables, we observe that participants in the three oldest age groups (50–59, 60–69, and 70 or older) are significantly more likely to choose the tax-prepaid account, compared with those under 50. This finding may be due in part to older participants' familiarity with the existing TFSA and RRSP investment vehicles, the fact that individuals are not permitted to contribute to an RRSP beyond the age of 71, and/or the fact that at least some of these older participants may be retired and therefore may have neither the need nor the financial means to contribute to an RRSP.⁴⁹ For these reasons, we excluded any participant who had previously invested in a TFSA and/or an RRSP from the third of our three experiments (study 2), to ensure that our results in study 1a cannot be attributed to situational factors specific to older Canadians.⁵⁰ However, first, in study 1b, we examined another population of financial consumers, as described below.

Study 1b

The purpose of our second experiment (study 1b) was to determine whether our hypothesized results in study 1a might generalize to a non-Canadian population. We attempted to replicate the results from study 1a using a sample of 184 adults in the United Kingdom and the same instrument (except that we did not collect income information, given the currency difference). Like Canada, the United Kingdom also offers a tax-deferred plan (the self-invested personal pension) and a tax-prepaid savings plan (the individual savings account). However, because neither plan includes the word “tax” in its name, unlike Canadian participants, UK participants would

⁴⁹ RRSP contributions are determined by “earned income,” which retirees will no longer have if they are neither employed nor self-employed.

⁵⁰ Although not tabulated, we ran logistic regressions in studies 1b and 2 with age category as an independent variable and found that, in both studies, the age coefficients were not statistically significant at the 0.05 level.

TABLE 4 Logistic Regression Analysis, Study 1a

Dependent variable: tax-free account	Regressions	
	(1)	(2)
Accurate	0.129** (3.61)	0.128** (3.53)
High FE	-0.05 (-0.11)	
High income ^a	-0.035 (-0.88)	
Age		
30-39	-0.003 (-0.05)	
40-49	0.019 (0.32)	
50-59	0.158* (2.32)	
60-69	0.193** (3.02)	
> 70	0.171** (2.75)	
Female	0.019 (0.49)	
English-speaking	-0.033 (-0.73)	
Pseudo R^2	0.016	0.046
N	650	650

* represents a p -value of < 0.01 ; ** represents a p -value of < 0.001 .

a Using seven income group dummies generates similar results.

Notes:

Dependent variable: Tax-prepaid account = 1 if participants chose the tax-prepaid account; 0 for the tax-deferred account.

Independent variables:

Accurate = 1 if the tax-prepaid account description is matched with the “tax-free account” name and the tax-deferred account description is matched with the “retirement savings account” name; 0 if the match between account descriptions and account names is switched.

High financial expertise (FE) = 1 if financial expertise $>$ median of 2; 0 if financial expertise is \leq median of 2.

High income = 1 if income $>$ median income group of 4; 0 if income is \leq median income group of 4.

probably not have prior knowledge associating “tax-free” in an account name with the tax-prepaid plan description. Therefore, a UK study that replicated our results would help to mitigate any concern that our findings in study 1a are attributable to participants’ familiarity with the TFSA and the RRSP names in Canada.

By gender, 35.3 percent of the participants self-identified as male, 64.1 percent as female, and 0.5 percent as non-binary. The age of the sample ranged between 18 and 65 years. The mean age of the sample was 30.27 years. Participants were recruited through the online Prolific platform and were paid £0.50 each for completing “a survey about savings choices.” We requested 200 participants (100 for each experimental condition) and received 184 complete questionnaires. Participants were also asked whether they had heard of an “RRSP” or a “TFSA,” and all 184 respondents said that they had not.

Similar to the findings of study 1a, and as shown in table 5, we observe that in the inaccurate condition the proportion of participants who chose the tax-free account when reading the tax-deferred account description (30.4 percent) is significantly greater than the proportion of participants who chose the retirement savings account in the accurate condition (16.3 percent) ($\chi^2 = 4.37, p = 0.037$). These findings are consistent with those in study 1a and provide convergent evidence for our hypothesis that the “tax-free” heuristic biases saving decisions and appears to generalize quite broadly.

Study 2

In studies 1a and 1b, we observe that when faced with a choice between tax-sheltered savings plans, individuals can be influenced by the favourable “tax-free” name bias. In study 2, we test our hypothesis with the addition of another relevant variable: information volume. By providing more detailed descriptive information about each savings plan, we explore whether the amount of descriptive information affects the interaction between heuristic processing and systematic processing in participants’ saving choices. Further, we limit our sample to Canadians without prior experience of saving in either an RRSP or a TFSA. Doing so allows us to control for the influence of individuals’ prior saving decisions (and a possible pre-existing heuristic bias) and also allows us to examine a relevant sample of participants with a lower baseline of financial knowledge. On the one hand, increasing information volume may help participants to make more informed decisions (that is, engage in more systematic processing). On the other hand, participants may be overwhelmed by a larger volume of information and may rely more on heuristic processing.

Experimental Design

The experiment utilizes a 2×2 between-participants design. As in studies 1a and 1b, we manipulated the match between descriptions of two tax-sheltered plans (one being a tax-deferred plan and the other a tax-prepaid plan) and the plan names (accurate versus inaccurate). However, in study 2 we also manipulated the length of each description, as either short or long. Thus, the four conditions were short and accurate; short and inaccurate; long and accurate; and long and inaccurate.

TABLE 5 Cross-Tab Summary, Study 1b

Plan name	Accurate description		Inaccurate description	
	Frequency count	Percentage	Frequency count	Percentage
Tax-free account	77	83.7	28	30.4
Retirement savings account	15	16.3	64	69.6
Total	92	100.0	92	100.0

Tax-Sheltered Account Descriptions

We used the same short descriptions as in studies 1a and 1b (shown in table 1), which contain approximately 35 words each. The long descriptions contain approximately 120 words each. The wording for the long descriptions is shown in table 6.

We developed our own wording after consulting 65 websites of Canadian financial services firms or financial advice sources that provide descriptions of RRSPs and TFSAs. The short descriptions contain a basic overview of each plan; the long descriptions contain the same basic overview, an illustration of the tax consequences of investing in the plan, and a list of qualifying investments. A summary of readability scores using common readability indices for the 65 pairs of descriptions is provided in table 7.⁵¹ We then compute the same readability scores for each of the four descriptions used in our experiment. Higher readability scores indicate greater reading difficulty. As shown in table 7, our long descriptions for the tax-deferred plan and the tax-prepaid plan have similar readability scores. These readability scores are similar to the average scores from the 65 websites for both types of accounts. Moreover, our short descriptions tend to be easier to read than our long descriptions, since the readability scores for the short descriptions are directionally lower than the readability scores for the long descriptions.

Given these readability scores, if our hypothesis is also supported in study 2, we can rule out the possibility that our findings thus far are attributable to differences in the readability of the descriptive language used in our experiments and the language used in real-life tax-sheltered savings products.

Participants

For study 2, we recruited 482 adult participants in Canada who had never previously contributed to an RRSP or a TFSA. The participants were screened first through a recruiting advertisement and again at the beginning of the survey. At the beginning of the survey, only participants who agreed that they had never contributed to an RRSP or TFSA were allowed to proceed and complete the survey.

⁵¹ See John C. Begeny and Diana J. Greene, "Can Readability Formulas Be Used To Successfully Gauge Difficulty of Reading Materials?" (2014) 51:4 *Psychology in the Schools* 198-215.

TABLE 6 Long Descriptions of Plans Provided to Participants in Study 2

Accurate wording	Which account would you choose?	Retirement savings account: You will receive a tax refund when you make a deposit. Withdrawals are taxed as income. Suppose you make \$50,000 before tax a year and your income tax rate is 30%. If you put \$1,000 in this account, you will receive a \$300 tax refund after filing your taxes. Investment income accumulated in the account is tax-free. Eventually when you withdraw \$1,000 from the account, you will pay \$0 tax regardless of your income tax rate %. This account can be used for investments in a variety of types of financial assets, including cash, mutual funds, securities listed on a designated stock exchange, guaranteed investment certificates, bonds, and certain shares of small business corporations.
Inaccurate wording	Which account would you choose?	Tax-free account: You will not receive a tax refund when you make a deposit or pay tax when you make a withdrawal. Suppose you make \$50,000 before tax a year and your income tax rate is 30%. If you put \$1,000 in this account, you will not receive a tax refund after filing your taxes. Investment income accumulated in the account is tax-free. Eventually when you withdraw \$1,000 from the account, you will pay \$300 or less tax if your income tax rate remains at 30% or drops lower. This account can be used for investments in a variety of types of financial assets, including cash, mutual funds, securities listed on a designated stock exchange, guaranteed investment certificates, bonds, and certain shares of small business corporations.

TABLE 7 Readability Scores of Plan Descriptions

Readability indices ^b	Average indices for 65 actual descriptions ^a		Descriptions in experiments			
	RRSP	TFSA	RSA	TFA	RSA	TFA
Automated readability index	8.84	8.18	8.1	9.5	4.2	4.2
Coleman-Liau index	10.32	10.05	10.2	10.1	9.1	8.7
SMOG index	8.79	8.70	9.1	10.1	6.8	6.8
Gunning-Fog index	12.04	11.84	12.6	14.0	9.2	9.2
Flesch-Kincaid grade level index	9.20	8.86	9.3	10.4	5.8	5.8
New Dale-Chall index	7.48	7.09	8.1	8.0	7.0	6.9

RRSP = registered retirement savings plan; RSA = retirement savings account; TFA = tax-free account; TFSA = tax-free savings account.

- a Summarized from 65 Canadian websites in which descriptions of RRSPs and TFSAs are each provided. The websites were randomly chosen in Google using keywords “TFSA” and “RRSP.” Examples of websites are Money Talk (www.moneytalkgo.com/rrsp-vs-tfsa-which-one-do-i-choose); Motley Fool (www.fool.ca/investing/tfsa-vs-rrsp); and Scotia iTrade (www.scotiaitrade.com/en/home/learning-centre/posts.rrsp-and-tfsa.tfsas-and-rrsps-key-benefits-and-differences.html). The scores were calculated using WebFX (www.webfx.com/tools/read-able), except for the new Dale-Chall index, which was calculated using readability formulas (<https://readabilityformulas.com/free-dale-chall-test.php>).
- b For a discussion of the relative merits of key readability indices, see John C. Begeny and Diana J. Greene, “Can Readability Formulas Be Used To Successfully Gauge Difficulty of Reading Materials?” (2014) 51:2 *Psychology in the Schools* 198–215. Higher scores tend to indicate less readability. For example, a new Dale-Chall score of 8.0 to 8.9 represents a reading level for grades 11–12 whereas a score of 10 and higher indicates a college graduate reading level. An automated readability index score of 4 represents a third-grade reading level whereas a score of 9 represents an eighth-grade reading level. The Flesch-Kincaid grade level index is the only one of six indices that corresponds exactly to a grade level.

By gender, 55.4 percent of the participants self-identified as male, 43.6 percent as female, and 1.0 percent as non-binary. The age of the sample ranged between 18 and 75 years, with a mean age of 28.4 years.⁵² At the conclusion of the survey, we asked participants to self-report their level of expertise pertaining to financial products by marking their choice on a seven-point scale⁵³ where 1 = “no expertise” and 7 = “I’m an expert.” The mean score was 3.09, and only seven participants chose

⁵² The relatively young age is consistent with our screening to recruit only participants who had not previously invested in a tax-sheltered plan, since older Canadians are more likely to have contributed to one or both plans.

⁵³ We used a seven-point scale for study 2 (rather than the five-point scale in study 1a) to provide greater nuance in the analysis because our results in study 1a did not vary significantly according to self-reported financial expertise.

category 7, suggesting that this sample did not contain a significant number of participants who considered themselves savvy regarding financial products. Participants were recruited through Prolific, the same participant recruitment platform used in study 1b, and were paid £0.50 each for completing “a survey about savings choices.”⁵⁴ We chose a different recruiting platform from study 1a to rule out that the possibility that variance in respondent pools could have biased the results.

As in the earlier studies, the dependent variable was the plan that participants chose from the two options presented to them, representing tax-deferred and tax-prepaid plan descriptions with corresponding plan names. The order in which the descriptions were presented to participants was randomized. Participants were also randomly assigned to experimental conditions. After participants indicated their choice, we asked them through follow-up questions to explain their reasoning and report their financial expertise. We then asked how much effort they put into their decision before collecting standard demographic information pertaining to gender, age, and native language.

Results

Table 8 presents the results of study 2. At first glance, a clear majority of participants preferred the tax-prepaid plan irrespective of whether the plan description matched the tax-free account name or the retirement savings account name. The same result holds regardless of whether the account descriptions were long or short. These findings are consistent with those in study 1a, suggesting a strong preference for the tax-prepaid plan. A cross-tab summary is shown in panel A of table 8. Figure 3 graphs these results.

To test our hypothesis regarding the tax-free heuristic and saving choices, we are interested in knowing the following:

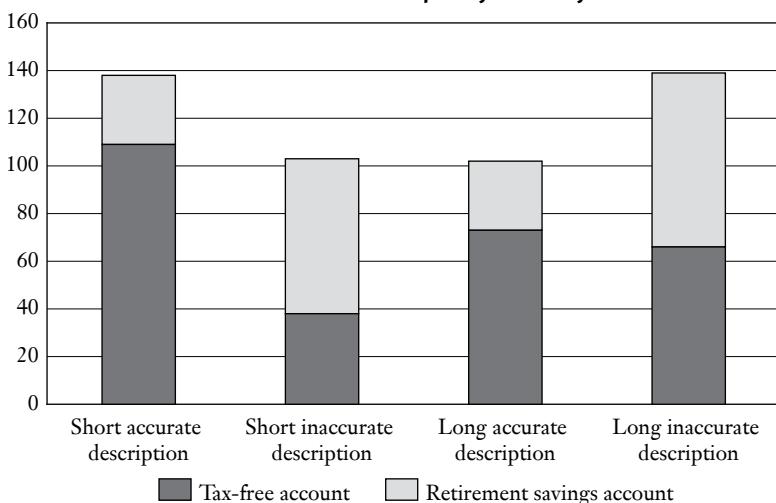
1. given a short description, whether participants are more likely to choose the tax-deferred plan if it is named “tax-free account” rather than “retirement savings account”;
2. given a long description, whether participants are more likely to choose the tax-deferred plan if it is named “tax-free account” rather than “retirement savings account”; and
3. whether the choice based on the tax-free account name in (1) differs from the choice in (2).

Support for our hypothesis would be found if the choice likelihood of the tax-free account name is significant in both (1) and (2), and if the choice likelihood is higher in (2) than (1). That is, our hypothesis will be supported if participants are more likely to choose a tax-sheltered savings plan in the presence of the favourable tax-free

⁵⁴ Because the Prolific platform is based in the United Kingdom, the participants in study 2 were paid in UK currency.

TABLE 8 Cross-Tab Summary, Study 2

Panel A Choice frequencies by experimental condition								
	Short				Long			
	Accurate description	Inaccurate description						
Tax-free account	109	79.0	38	36.9	73	71.6	66	47.5
Retirement savings account	<u>29</u>	<u>21.0</u>	<u>65</u>	<u>63.1</u>	<u>29</u>	<u>28.4</u>	<u>73</u>	<u>52.5</u>
Total	138	100.0	103	100.0	102	100.0	139	100.0
Panel B Choice frequencies by level of financial expertise								
	Short				Long			
	Accurate description	Inaccurate description						
Low financial expertise (< 3 on a 7-point scale)								
Tax-free account	59	78.7	27	39.1	40	70.2	46	49.5
Retirement savings account	<u>16</u>	<u>21.3</u>	<u>42</u>	<u>60.9</u>	<u>17</u>	<u>29.8</u>	<u>47</u>	<u>50.5</u>
Total	75	100.0	69	100.0	57	100.0	93	100.0
High financial expertise (> 3 on a 7-point scale)								
Tax-free account	50	79.4	11	32.4	33	73.3	20	43.5
Retirement savings account	<u>13</u>	<u>20.6</u>	<u>23</u>	<u>67.6</u>	<u>12</u>	<u>26.7</u>	<u>26</u>	<u>56.5</u>
Total	63	100.0	34	100.0	45	100.0	46	100.0
Panel C Choice frequencies by level of mental effort								
	Short				Long			
	Accurate description	Inaccurate description						
Low mental effort (< 5 on a 7-point scale)								
Tax-free account	72	79.1	27	38.0	52	71.2	39	49.4
Retirement savings account	<u>19</u>	<u>20.9</u>	<u>44</u>	<u>62.0</u>	<u>21</u>	<u>28.8</u>	<u>40</u>	<u>50.6</u>
Total	91	100.0	71	100.0	73	100.0	79	100.0
High mental effort (> 5 on a 7-point scale)								
Tax-free account	37	78.7	11	34.4	21	72.4	27	45.0
Retirement savings account	<u>10</u>	<u>21.3</u>	<u>21</u>	<u>65.6</u>	<u>8</u>	<u>27.6</u>	<u>33</u>	<u>55.0</u>
Total	47	100.0	32	100.0	29	100.0	60	100.0

FIGURE 3 Choice Frequency for Study 2

heuristic and if participants rely on heuristics in making their decisions to a greater extent when more information is provided in the plan descriptions.

Panel A of table 8 shows that in the short and accurate condition, only 21.0 percent of participants (29 of 138) chose the retirement savings plan name when reading the short description of the tax-deferred plan. In the short and inaccurate condition, 36.9 percent of participants (38 of 103) chose the tax-free plan name when reading the same description. A chi-squared goodness-of-fit test shows that the 15.9 percent increase is significant ($\chi^2 = 6.64, p < 0.01$). Similarly, in the long conditions, the proportion of participants choosing the tax-deferred plan increased significantly from 28.4 percent (29 of 102) to 47.5 percent (66 of 139), or a 19.1 percent increase, when the plan was named “tax-free account” rather than “retirement savings account” ($\chi^2 = 8.16, p < 0.01$). The increase in the long conditions (19.1 percent) is higher than the increase in the short conditions (15.9 percent), suggesting that participants rely on the tax-free heuristic in making saving choices to a greater extent when presented with more information.⁵⁵ These findings, consistent with the results in studies 1a and 1b, support our hypothesis about the biasing effect of the tax-free heuristic.

Next, we investigate whether participants who are less financially savvy or who make less effort in their financial decision making are more likely to choose a tax-sheltered savings plan on the basis of the tax-free heuristic cue in the name. After choosing a tax-sheltered savings plan, participants were asked, “How much expertise

⁵⁵ Consistent with our expectations, respondents in the long condition categories were significantly more likely to find the longer description more intimidating ($t = 6.36, p < 0.01$), confusing ($t = 5.99, p < 0.01$), and overwhelming ($t = 7.41, p < 0.01$) than respondents in the short description categories.

do you have on the subject of financial products?" and given seven possible choices, where 1 = "no expertise" and 7 = "I'm an expert." The mean and median responses are 3.09 and 3.00, respectively. The majority of participants do not consider themselves financial experts: 38.6 percent (186 of 482) chose category 1 or 2, and only 4.1 percent (20 of 482) chose category 6 or 7, when assessing their financial expertise. We divide the participants into two groups by the median level of 3. We expect that participants who consider themselves financially savvy are more likely to engage in effortful thinking and that participants with less financial expertise are more likely to follow the tax-free heuristic cue in choosing between the two tax-sheltered plans.

Panel B of table 8 reports the choice frequency of participants with high (> 3) and low (< 3) levels of financial expertise, respectively. Consistent with the results in study 1a, a majority of the participants preferred the tax-prepaid plan description irrespective of the assigned plan name, the length of the description, or the level of financial expertise. More interestingly, we observed a significant increase in the proportion of participants choosing the less-desired tax-deferred plan when it was given the tax-free account name, but only in the low financial expertise group. For instance, in the short description condition, 39.1 percent of participants chose the tax-prepaid plan when it was named the tax-free account, and only 21.3 percent chose the same plan when it was named the retirement savings account. The 17.8 percent increase is statistically significant ($\chi^2 = 4.62, p = 0.03$). The increase of 19.7 percent (from 29.8 percent to 49.5 percent) in the long description condition is also significant ($\chi^2 = 4.82, p = 0.03$). In contrast, participants with high financial expertise do not exhibit a significantly higher probability of choosing the tax-deferred plan because of the tax-free heuristic cue in the plan name. The corresponding increases are 11.8 percent ($\chi^2 = 1.06, p = 0.30$) in the short description condition and 15.9 percent ($\chi^2 = 2.13, p = 0.14$) in the long description condition. These findings provide additional evidence in support of our hypothesis, since participants are more likely to choose a tax-sheltered plan based on a heuristic cue when they do not have the expertise to process the tax implications of the plans.

In addition to financial expertise, we asked participants about how much effort they put into their decision, again using a seven-point scale where 1 = "none at all" and 7 = "very much."⁵⁶ The mean and median responses are each 5, with the majority of the participants (65.3 percent) choosing 5 or lower on the mental effort question. We divided the participants into two groups based on the median level of mental effort. We expect the group with relatively high mental effort to be less influenced by the tax-free heuristic cue in the plan name.

Panel C of table 8 presents the choice frequency of participants who invested low (≤ 5) and high (> 5) mental effort in their decisions. Despite a clear preference for the tax-prepaid account across all conditions, only low mental effort participants are

⁵⁶ In addition to the question about how much effort participants put into their decision, we asked how careful they were and how much thought they put into the decision. Using the answers to the two other questions does not materially change our results.

significantly more likely to switch to the tax-deferred plan when it is given a tax-free account name. For instance, in the low mental effort group, 38.0 percent chose the tax-free account when it was matched with the tax-deferred plan description, whereas only 20.9 percent chose the retirement savings account when it was matched with the same description, a significant increase of 17.1 percent ($\chi^2 = 4.96, p = 0.03$). In contrast, the increase in the high mental effort group, from 21.3 percent to 34.4 percent, is statistically insignificant ($\chi^2 = 1.07, p = 0.30$).⁵⁷

In conclusion, study 2 provides additional evidence of our hypothesis. Participants are more likely to choose a tax-sheltered savings plan with a plan name that contains a tax-free heuristic cue. Providing more information appears to increase participants' reliance on the heuristic cue in their saving choices. The bias toward the tax-free heuristic cue is stronger for participants who have relatively less financial expertise and who make less mental effort in their choices.⁵⁸

DISCUSSION AND CONCLUSION

This research sets out to investigate whether individuals will be more likely to choose a tax-sheltered savings plan when its name contains a favourable heuristic cue about taxes. On the basis of the heuristic-systematic model of information processing, we

⁵⁷ The proportions for the long description conditions are as follows: 49.4 percent (28.8 percent) of participants in the low mental effort group chose the tax-prepaid (tax-deferred) plan matched with the retirement savings account description. By contrast, 45.0 percent (27.6 percent) of participants in the high mental effort group chose the tax-prepaid (tax-deferred) plan matched with the retirement savings account description. A chi-squared goodness-of-fit test shows that only the increase in the low mental effort group is statistically significant ($\chi^2 = 5.90, p = 0.02$ for the low mental effort group and $\chi^2 = 1.81, p = 0.18$ for the high mental effort group).

⁵⁸ As an additional robustness check to ensure that participants preferred an account name containing “tax-free,” irrespective of the accompanying descriptive information, we conducted an untabulated study with 504 Canadian participants (who had never saved in an RRSP or a TFSA). The sample was 58.4 percent male, 39.4 percent female, and 2.2 percent non-binary. The mean age was 28.8 years. Participants were recruited through Prolific and paid £0.50. They were randomly assigned to one of four conditions, corresponding to one of the four plan descriptions used in study 2. They were then asked to choose which account name best matched the plan description and given five possible names from which to choose: equity savings account, lifetime savings account, retirement savings account, personal pension account, and tax-free account. The tax-free account was the most preferred name across all conditions. (The p -values for these chi-squared tests are all lower than 0.01.) For the tax-prepaid descriptions, the tax-free account is the overwhelmingly preferred choice: 87.2 percent of participants (109 of 125) and 86.7 percent (111 of 127) chose the tax-free name in the short and long description conditions, respectively. More interestingly, participants exhibited the same preference for the tax-free account name when provided with the tax-deferred descriptions. For the short description condition, 43.4 percent of participants (56 of 129) chose the tax-free name, and 28.7 percent (37 of 129) chose the retirement savings name. The 14.7 percent difference is significant, with a p -value of 0.048. We also find consistent results for the long description of the tax-deferred plan. Overall, these results show a clear preference for an account that is named “tax-free.”

predict that individuals presented with technical information about tax-sheltered savings plans will use an available mental shortcut—a heuristic—to guide their decision making rather than carefully analyze the information provided to them, which may be complex, ambiguous, or difficult to understand.

We conduct three studies to test our hypothesis. In study 1a, our key finding is that labelling a description of an actual tax-deferred plan as “tax-free” significantly increases the proportion of participants who choose that plan (30 percent) relative to participants who read the same description of such a plan without a “tax-free” label (16 percent). Study 1b replicates this result using a UK sample, suggesting that our findings can generalize beyond the Canadian context. In study 2, we find that providing more information about the tax-sheltered savings plans does not reduce the bias toward the “tax-free” label, suggesting that the tax-free heuristic is impervious to relative levels of systematic processing or more detailed descriptions.

Our results provide robust support for a heuristic-processing explanation of individuals’ preferences in choosing between tax-sheltered savings plans. Even when individuals have the opportunity to systematically process information about tax-sheltered plans, they tend instead to use an available mental shortcut, leading them to choose the favourable tax-free name of the account, irrespective of whether it is a tax-deferred plan or a tax-prepaid plan.

This finding has important implications for government policy and financial decision makers, because it suggests that attempts to inform the public about differences in the tax-deferred or tax-prepaid plans may be less effective if there is a heuristic in the name of either plan. This implication is further supported by a more nuanced analysis of the results in each study, in which the overall heuristic effects are seen to be stronger among participants who self-report as having relatively low levels of financial expertise and/or who engage in relatively low levels of mental effort.

Another implication of our findings is that a tax-sheltered plan with a heuristic cue might result in suboptimal lifetime savings. In Canada, there is national empirical evidence that a partial crowding-out or displacement effect has occurred since the TFSA was introduced in 2009. It is possible that the amount of new savings that the Canadian government hoped to generate by the introduction of a second tax-sheltered savings plan might be limited by something as simple as a plan name containing a heuristic. Alternatively, the favourable bias toward TFSAs could have an overall positive impact, since this type of account is generally preferable for individuals with lower socioeconomic status, who are also the individuals most susceptible to the “tax-free” heuristic.⁵⁹ Importantly, a government has complete control over the choice of a plan name. Our results suggest that governments need to take greater care when

⁵⁹ A TFSA is preferable to an RRSP for some low-income individuals who would otherwise be subject to clawbacks of guaranteed income supplement or old age security payments on taxable RRSP withdrawals. This issue is discussed in Department of Finance, *Tax Expenditures and Evaluations 2001* (Ottawa: Department of Finance, 2001). Alternatively, an RRSP is preferable to a TFSA for individuals with lower marginal tax rates post-retirement versus pre-retirement.

determining plan names, and ensure that they do not contain a heuristic, either favourable or unfavourable, that could inadvertently bias individuals’ saving decisions.

Our results make several contributions to scholarship. Most saliently, we extend the tax literature on heuristics by showing the biasing effect of a tax heuristic in a tax-sheltered savings plan name on individuals’ choice to invest savings in that plan. A favourable tax cue in a plan name has strong biasing effects on individuals’ saving choices in the presence of accompanying descriptive information, which must be processed systematically. We also extend the behavioural finance literature on why individuals might choose one tax-sheltered savings plan rather than another by showing that a psychological bias can significantly influence individuals’ saving decisions if a tax-sheltered plan name contains a heuristic cue.

Our findings likewise contribute to the broader literature on financial literacy, which has not often examined the tax implications of saving decisions. Our findings suggest that the effectiveness of informational initiatives about tax-sheltered savings is conditional on not having a heuristic in a plan name. In this way, our research provides greater nuance to the empirical findings of Boyer, d’Astous, and Michaud,⁶⁰ and Rupert and Wright,⁶¹ who suggest that individuals can be educated to understand the tax-rate implications of their financial decisions. Our results also provide insight into the observation of Lusardi and Mitchell, who note that researchers should consider “which sorts of problems are best suited to remedying through financial education, versus removing choice options from consumers’ menus altogether or simplifying the options that people face.”⁶² Because making a choice between a tax-deferred and tax-prepaid plan is a complex decision, the nomenclature in these account names could be chosen carefully to better educate and inform. Future research investigating heuristic considerations in the areas of tax literacy and financial literacy may be fruitful.

As is the case for all findings from behavioural research, there are limitations to our results. Because our studies were conducted using country-specific participants, our results may not generalize to other countries. While results from study 1a (with Canadian participants) were replicated in the United Kingdom in study 1b, we recognize the need for similar research in additional contexts. We also acknowledge that our results may have differed had we used different descriptive language, but our theoretical framework predicts the results that we found irrespective of the nuances of the descriptive language. Thus, we have no reason to believe that our results would be different had we used other plan descriptions. We encourage other extensions of the research presented in this article. For instance, we encourage research into

60 M. Martin Boyer, Philippe d’Astous, and Pierre-Carl Michaud, *Tax-Sheltered Retirement Accounts: Can Financial Education Improve Decisions?* National Bureau of Economic Research Working Paper no. 26128 (Cambridge, MA: NBER, 2019).

61 Rupert and Wright, *supra* note 29.

62 Annamaria Lusardi and Olivia S. Mitchell, “The Economic Importance of Financial Literacy: Theory and Evidence” (2014) 52:1 *Journal of Economic Literature* 5–44, at 34.

discovering how debiasing techniques can be used to overcome the heuristic cue in a tax-sheltered plan name.⁶³ We also encourage research to understand how acronyms in plan names can affect saving preferences, how other plan names might influence tax-sheltered savings, how other rational and behavioural factors may help to explain the increasing popularity of the TFSA, and how tax-related heuristics might affect other non-saving settings, such as tax incentives for consumer decisions.

63 See Balazs Aczel, Bence Bago, Aba Szollosi, Andrei Foldes, and Bence Lukacs, “Is It Time for Studying Real-Life Debiasing? Evaluation of the Effectiveness of an Analogical Intervention Technique” (2015) 6:1120 *Frontiers in Psychology* 1-13.