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Who wants paternalism?

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Abstract Little is known about the demand side of paternalism. We investigate attitudes towards paternalism among Danish students. The main question is whether demand for paternalism is related to self-control, either because people with self-control problems seek commitment devices to overcome these problems, or because people with good self-control want those who lack it to change their behaviors. We find no evidence linking self-control to attitudes towards weak forms of paternalism (e.g. nudges or information about health consequences). But respondents with good self-control are significantly more favorable towards strong paternalism (e.g. restricting choices or sin taxes) than those struggling with self-control.

Keywords: Self-control, paternalism, commitment, political attitudes

JEL Classification: D03, H11, C83, D6

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1 Introduction

Many people find it difficult to resist a tempting choice, even though they know they later regret it. Failure to overcome such *self-control problems* results in delay or underprovision of useful but unpleasant activities and leads to persistent "bad habits".² For example, self-control problems may cause bad habits, such as not exercising or eating too much fast food, and thereby contribute to problems of overweight. According to the World Health Organization more than 1.4 billion adults were overweight in 2008. Of these over 500 million were obese.³ This has severe consequences for the individuals: Excess weight is seen as contributor to health problems, such as diabetes, cardiovascular diseases, musculoskeletal disorders and some cancers. For example, almost 10 percent of all medical spending in 2008 the US (about \$147 billion) were associated with overweight and obesity (cf. Finkelstein et al. 2009).

As a reaction to such alarming figures, governments across the world started to take action. Denmark, for example, in 2011 introduced the world's first fat tax. Butter, milk, cheese, meat, oil and processed food are now subject a special tax if they contain more than 2.3 percent saturated fat. This increased the cost of a half-pound of pork fat, for example, by 35 percent, from DKK 12 (USD 2.15) to DKK 16 (USD 2.85).⁴ Officials hope that the new tax will limit the population's intake of fatty foods.

However, such *sin taxes* are controversial. In summer 2011, the Danish newspaper Politiken ran a series of articles about obesity, which led to a debate among the readers about whether the government should try to prevent obesity. The journalists conclude that "Obesity is a big problem for society, but politiken.dk's readers cannot agree whether it is also the responsibility of society".⁵ Not only can the readers not agree, but economists cannot either. Some argue that fat taxes are harmful. People without a self-control problem will have to pay more for their butter. Even fat people may not benefit from this. After all, it may be their rational choice to become fat. In other words, fat taxes may not make anybody better off and but hurt almost every consumer. Others argue that an unhealthy diet increases the risk of getting a lifestyle disease (such as diabetes), which leads to more sick days from work and expands (public) health care costs. Thus, an unhealthy lifestyle creates a negative externality, and there is a need for government intervention. Even in the absence of such externalities, many

² There are several theoretical models that capture such self-control problems: e.g., the beta-delta model (Laibson 1997, O'Donoghue and Rabin 1999), Thaler and Shefrin's (1981) doer-planner model, Fudenberg and Levine's (2006) dual-self model, or Gul and Pesendorfer's (2001) temptation utility model.

³ <http://www.who.int/mediacentre/factsheets/fs311/en/index.html> (accessed July 2012).

⁴ Beating Butter: Denmark Imposes the World's First Fat Tax, TIME Magazine, Oct 6, 2011.

<http://www.time.com/time/world/article/0,8599,2096185,00.html#ixzz24BpeJ28P> (accessed August 2012).

⁵ <http://politiken.dk/debat/article1333633.ece> (accessed July 2012).

behavioral economists argue that fat taxes are beneficial. People with self-control problems do not always choose in accordance with their own best long-run interest. Hence, they can benefit from committing to their actions beforehand to prevent themselves from giving in to temptations. Fat taxes and other regulations can serve as such commitment devices.⁶ That is, they can make people with self-control problems better off. Others affected by the regulations can be compensated for the costs imposed on them.⁷ Hence, if people with self-control problems wish to change their behaviors, they might demand these regulations as a way to self-commit.

The aim of this paper is to investigate whether attitudes towards paternalistic regulations are related to a person's self perception of self-control. This helps shed light on which voters demand paternalistic regulations. Are these people with self-control problems seeking a device for self-commitment? Or are they paternalists who wish to change others' behavior rather than their own? To answer these questions, we conduct a survey among students at Aarhus University, Denmark's second largest university. The questionnaire elicits a measure of self-control and attitudes towards paternalism. Specifically, self-control is measured with the widely used Brief Self-Control Scale by Boone et al. (2004). To measure attitudes towards (paternalistic) regulations we develop a new measure. The respondents are asked how much they agree or disagree with statements about specific regulations. The answers to these questions are then aggregated to composite scales measuring attitudes towards weak and strong forms of paternalism.

Paternalism can be defined as "...*the interference of a state or an individual with another person, against their will, and defended or motivated by a claim that the person interfered with will be better off or protected from harm....*"⁸ Thus, paternalistic regulations will undermine the individual's liberty for the sake of his own good. For example, legislations that make it compulsory to wear a seat belt, prohibit drugs, or taxes on unhealthy products interfere with the individual's liberty but can all have the purpose of making the individual better off. Yet paternalistic regulations differ in their intrusiveness. Thaler and Sunstein (2003) define regulations as *libertarian* if they influence people to make better

⁶Bryan et al. (2010, p.672) describe a commitment device as "*an arrangement that is entered into by an individual with the aim of helping fulfill a plan for future behavior that would otherwise be difficult owing to intrapersonal conflict stemming from, for example, a lack of self-control*". Individuals "enter" paternalistic regulations by voting for them. For example, people who cannot resist fatty food because they lack self-control might like the state to tax fatty food to make it less tempting.

⁷There is a debate in behavioral economics about the appropriate welfare criterion in a context where people have self-control problems. Camerer et al. (2003) propose *asymmetric paternalism* as a criterion for evaluating paternalistic regulations. Asymmetric paternalism refers to regulations that create large benefits for those who make errors, by correcting those errors, while imposing little or no harm to those who do not make errors. O'Donoghue and Rabin (2006) show that positive sin taxed can be (quasi) pareto-superior to a zero sin tax if the government redistributes tax income. As welfare measure they take the individual's long-run utility. Gul and Pesendorfer oppose such a welfare criterion and argue for sticking to the doctrine of revealed preferences (for a summary of their arguments see, e.g., Gul and Pesendorfer 2004).

⁸ <http://stanford.library.usyd.edu.au/entries/paternalism/> (accessed July 2012).

choices but at the same time leave people free to choose for themselves. In other words, libertarian paternalism helps those who want the help without burdening those who do not want or need help. While such measures still are paternalistic, because they attempt to move people in a direction that policy makers think will make them better off, they are seen as a nonintrusive type of paternalism, because choices are not blocked or significantly burdened. Stronger forms of paternalism directly manipulate the choice set.

Little is known about the demand side of paternalism. To help fill this gap, we investigate attitudes towards paternalism among Danish students. Following the ideas above, we construct two subscales for attitudes towards paternalism, based on the intrusiveness of the policies. These scales are referred to as weak and strong paternalism, respectively. Weak paternalism captures regulations that try to nudge people into a certain direction, e.g., by informing them about a healthy lifestyle. Strong paternalism captures policies that reduce the choice set (e.g. via taxes) or even restrict choices (such as making cycle helmets mandatory).

Overall, we observe that the respondents are more positive towards weak paternalism than strong paternalism. We find a significant relation between self-control and demand for paternalistic regulations. Surprisingly, support for strong forms of paternalistic policies is significantly higher among respondents with *good* self-control than among respondents with low self-control. Thus, it is not the case that paternalism is demanded by people who need it as a commitment device. Rather it is the people who do not need commitment who support these policies the most. Conceivably, those who have good self-control feel that it would be better for people with low self-control to exert more willpower. Those intentions supporting the regulations would be purely paternalistic. Fairness concerns can provide another explanation for why people with good self-control demand paternalistic regulations. People who regularly exert self-control might feel that if *they* resist temptation, so should everyone else, and if *they* do not impose externalities (e.g., through higher health costs), other people should not impose such costs on society either.

We further examine the result that people with self-control problems are less in favor of paternalistic regulations by looking at a specific group often associated with self-control problems: smokers. Hersch (2005) investigates the support for regulations that restrict smoking in different public areas. He finds that smokers in general are less supportive of these regulations than non-smokers. However, smokers who are planning to quit are far more supportive about the restrictions than smokers not planning to quit. These findings suggest that smokers who plan to quit value smoking restrictions as a way of self-commitment. In line with Hersch's results, in our survey smokers have more negative attitudes than

non-smokers towards tobacco-related regulations, such as smoking bans in restaurants and at the workplace, scare pictures on cigarette packages, or taxes on cigarettes. But, at the same time, smokers who wish to quit are not more favorable towards smoking restrictions than smokers who do not wish to change their behavior. For those who just wish to smoke less, there is one policy for which we find more support relative to other smokers: smoking bans in restaurants. It appears that such bans are seen as a means to reduce smoking but not as helpful for giving up smoking entirely.

When examining the relationship between attitudes towards paternalism and self-control, we include several background variables and control for political attitudes in different ways. We observe that women are more supportive of any form of paternalism than men. Respondents who are generally positive towards a strong role of the state are in turn more positive towards weak or strong forms of paternalism. Those who support pro-social regulations are in turn more positive towards weak paternalism, but not strong paternalism. The variables “smoker”, “believing that people know what is best for them”, and “believing that people are responsible for their weight” all have a negative effect on attitudes towards strong paternalism. We also control for voting intentions. As expected, respondents with intentions of voting for a left wing party are generally more positive towards paternalism than others.

The paper is structured as follows. Section 2 describes the survey method. The results of the survey are reported in section 3. Section 4 concludes.

2 The survey

2.1 The survey instruments and background questions

Next to background questions including age, gender, and study area, the survey collects measures of self-control and elicits attitudes towards paternalism and the state, as well as voting intentions. A translation of the complete survey can be found in Appendix A.

2.1.1 Measuring self-control

We measure self-control with the widely used Brief Self Control Scale by Boone et al. (2004). It consists of 13 statements regarding the respondents' self-control. It includes questions such as “I am good at resisting temptation” and “Pleasure and fun sometimes keep me from getting work done” (see Appendix A, questions III.1-13).

Further we include questions about areas where self-control problems could cause the respondents not to behave in line with what they think is optimal for themselves in the long run. Specifically, we ask how much respondents drink, smoke, and exercise; and whether they would like to exercise more, or smoke and drink less. Appendix B discusses additional, non-incentivized task measures of time preferences included in the survey.

2.1.2 Measuring attitudes

This section describes the questions measuring attitudes towards paternalism and the other attitudes we elicit. The latter attitude questions can be divided into questions regarding the role of the state and whether the respondents think that there is a need for paternalism.⁹ Most of the attitude questions are formulated as statements to which respondents state their disagreement or agreement on a 5-point Likert scale. The same scale is used throughout the questionnaire to reduce a potential source of confusion.

Paternalism

The questionnaire contains 16 questions measuring attitudes towards paternalism. These are all statements about specific regulations in health, contracting and safety such as “It should be voluntary to wear a seatbelt when riding in a car” or “There should be taxes on cigarettes”. The regulations vary in their intrusiveness. A number of regulations are labeled weak paternalism because they primarily concern an offer of information and provide additional options. An example is the item: “The state should offer help to smokers who want to quit”. In contrast, the strong paternalism items regard intrusive regulations, taxes and direct restrictions placed on choices. Here we also include the item “Cigarette packets should have scare pictures of unhealthy lungs, corpses etc.”. Such pictures go beyond merely providing information by adding unpleasant visual context. Their purpose is to scare people off from smoking, rather than purely state facts about health risks. They can be thought of as a psychological tax that smokers must endure.

Role of the state

With 18 questions we measure attitudes towards the role of the state. These allow us to analyze the relationship between attitudes towards paternalism and attitudes towards an active state in general. The statements are about regulations in different areas including social welfare, economic policies aimed at supporting jobs or industry and regulating externalities. We also include two questions measuring “over-regulation”, referring to regulations with no clear benefits. Some of the above items

⁹The survey also included 6 questions from the social responsibility scale by Berkowitz and Lutterman (1968). We did not include the scale in the following because it has a low internal consistency with a standardized Cronbach alpha of only 0.425.

are inspired by and Robinson (2009) and the International Social Survey Programme (ISSP 2006), which is an annual program of cross-national surveys covering topics important for social science research. In 2006 the annual survey was “Role of the Government IV”. We used some of the questions from the Danish version of this questionnaire in our survey.

Need for paternalism

The questionnaire includes 5 questions measuring the need for paternalism. It is based on two different ideas. First, if people act in their own best interest, there is no need for paternalistic policies. Second, if bad outcomes in life (such as becoming obese) are mainly caused by uncontrollable factors (like bad genes) rather than actions (like overeating) it is futile to try to regulate people's behavior. The survey hence includes two statements regarding whether people know what is best for them and whether they act upon this. Furthermore, there are three questions measuring whether people believe that effort or luck is the cause of good schooling and health outcomes. These questions are not measured on a disagree-agree scale. Instead, the respondents have to rate whether particular outcomes are entirely or partly due to one cause or another. For example, the respondents are asked whether they believe overweight is caused by bad genes or an unhealthy lifestyle and are given the following options: “Entirely due to bad genes” – “Partly due to bad genes” – “Both are equally important” – “Partly due to an unhealthy lifestyle” – “Entirely due to an unhealthy lifestyle”.

2.2 The sample

The questionnaire was administered as an online survey. The survey was advertised to 1,220 students via the course webpages of several large courses in the study areas Political Science, Law, and Business at Aarhus University (group 1) and to 2,500 randomly drawn student email addresses at Aarhus University via email (group 2). In group 2, 346 of the emails were not delivered; therefore only 2154 students received the questionnaire. To give the contacted students an incentive to participate in the survey, the respondents had the opportunity to win a cinema voucher of 200 Danish kroner (DKK), which is about 30 USD. Among the completed questionnaires 50 respondents were randomly chosen to receive such a cinema voucher.

From the 536 respondents, we exclude 63 who did not answer any of the essential questions. This leaves 473 respondents, leading to an effective response rate for the survey of 14.0 percent. For 374 respondents we have answers to all questions. The remaining 99 left out some questions.

Table 1

| Study area | Group 1 <i>Percent</i> | Group 2 <i>Percent</i> | Combined <i>Percent</i> | Aarhus University <i>Percent</i> |
|----------------------------------|---------------------------|---------------------------|----------------------------|-------------------------------------|
| Arts | 40.6 | 19.9 | 35.6 | |
| Science and Technology | 20.8 | 10.1 | 12.3 | |
| Health | 14.7 | 7.3 | 10.1 | |
| Business and Social Sciences 100 | 23.9 | 62.7 | 42.0 | |
| Total | 100 | 100 | 100 | 100 |

In the sample, 59.6 percent of the respondents are female. The average age is 23.4 years. While the age range is between 19 and 59 years, 95 percent of the respondents are between 19 and 30 years old. Group 1 consists solely of students from Business and Social Sciences. Therefore, slightly over half of the overall sample is from this study area. Table 1 shows how the respondents are distributed between the different study areas. The last column relates this to the overall distribution of students across study areas at Aarhus University.

Table 2 shows how respondents would have voted in the Danish national election if the election had been held when we ran our survey. The table also includes the results from a poll by Gallup around the time the survey was conducted¹⁰ as well as the results of the national election that took place after the survey, on the 15th of September 2011.¹¹ Comparing results of the survey to the Gallup poll and the election results shows that the respondents' voting intentions differ from those of the Danish population. The greatest relative differences are that two liberal parties (Radikale Venstre and Liberal Alliance) have much higher support among the respondents than in the Gallup Poll, and that a right-wing, populist party (the Dansk Folkeparti) has a much lower backing among the respondents.

3 Results

3.1 Summary statistics and composite scales

For measures of self-control and attitudes towards paternalism and the role of the state we construct composite scales. Before computing the composite scales, the negative statements are reversed, such that all questions in a scale are measured in the same direction. All attitude scales are measured such that a higher score corresponds to a more positive attitude towards the subject measured.

¹⁰ <http://politiken.dk/politik/meningsmaaleren/> (accessed October 2011).

¹¹ <http://www.valg-2011.dk/valgresultat-valg-2011/> (accessed October 2011).

Table 2

| | Survey July 2011 <i>Frequency</i> | Survey July 2011 <i>Percent</i> | Gallup Poll 10 July 2011 <i>Percent</i> | Election 15 Sept. 2011 <i>Percent</i> |
|-----------------------------|---|---------------------------------------|---|---|
| A - Socialdemokraterne | 45 | 11.9 | 27.6 | 24.8 |
| B - Det Radikale Venstre | 101 | 26.8 | 7.2 | 9.5 |
| C - Konservative | 34 | 9.0 | 6.2 | 4.9 |
| O - Dansk Folkeparti | 5 | 1.3 | 13.8 | 12.3 |
| F - Socialistisk Folkeparti | 54 | 14.3 | 13.0 | 9.2 |
| K - Kristendemokraterne | 1 | 0.3 | 0.9 | 0.8 |
| V - Venstre | 67 | 17.8 | 23.1 | 26.7 |
| I - Liberal Alliance | 36 | 9.5 | 3.5 | 5.0 |
| Ø - Enhedslisten | 34 | 9.0 | 5.2 | 6.7 |
| Other | 0 | 0.0 | 0.0 | 0.1 |
| Total | 377 | 100 | 100 | 100 |
| Cast a blank vote | 20 | | | |
| Would not vote | 7 | | | |
| Do not know | 35 | | | |
| Do not want to answer | 10 | | | |
| Missing | 24 | | | |
| Total | 473 | | | |

3.1.1 Paternalism

Table 3 shows the means and standard deviations of the 16 questions measuring attitudes towards paternalism. The means range from 2.9 to 4.6, revealing that respondents generally are positive towards paternalism. A mean above 3 indicates that respondents generally are in favor of a particular policy. The questions that prompt the most varied answers relate to scare pictures on cigarette packets and wearing a bicycle helmet.

To see if the respondents give consistent answers across the questions, we first examine the correlations between them, using Pearson's r to test for positive correlations. Only 4 of the 120 pairwise correlations are insignificant at the 10-percent level. The remaining are positive and significant with coefficients ranging from 0.02 to 0.57. This indicates that attitudes towards paternalism can be measured on a composite scale.

The questions are then divided into two groups based on their intrusiveness (see table 3). Two composite scales are constructed, measuring attitudes towards weak and strong paternalism, respectively. For "Weak paternalism" there are 444 valid responses. The standardized Cronbach alpha is 0.76, and the correlations between the score on any particular question and the composite scores fall in the interval 0.45-0.71. For "Strong paternalism" there are 451 valid responses. Cronbach's alpha

is 0.67, and the correlations between the score on any particular question and the composite scores are between 0.56 and 0.67. Overall, we conclude that there is good internal consistency when attitudes towards paternalism are divided into attitudes towards weak and strong paternalism.

3.1.2 The role of the state

The 18 questions measuring the respondents' attitudes towards the role of the state are divided into items measuring pro-social attitudes and items eliciting attitudes towards having a strong state.

Pro-social attitudes

People with pro-social attitudes are in favor of regulations that benefit other people or reduce inequality in society as a whole. Three questions measure such attitudes and are aggregated to a composite scale labeled "Pro-social". The internal consistency of the composite scale is good with a standardized Cronbach alpha of 0.66. The correlations between any single question and the composite scale are in the interval 0.67-0.84, indicating that all questions are relevant for the composite scale.

Strong state

15 questions measure the respondents' attitudes towards the role of the state in general. Respondents who score high on these questions are perceived to favor state intervention and regulations, indicating that they like to have a strong state. The correlations show that one of the items on "overregulation" is not strongly related to the rest.¹² This outsider variable is significantly correlated to only 4 of the other questions, and two of these correlations are negative. Therefore, this variable is excluded, and the 14 remaining questions are aggregated into a composite scale labeled "Strong state". It has a standardized Cronbach alpha of 0.76. Additionally, we use a version of the scale excluding questions on smoking related policies. This 12 question scale has an alpha of 0.77.

3.1.3 Self-control

The internal consistency of the BSC is good with a standardized alpha of 0.79. Cronbach's alpha cannot be further increased by deleting any single variable, and the correlations between any single variable and the composite scale are all in the range 0.40-0.68. The BSC theoretically ranges from 13 to 65 with 39 as the middle, or neutral, value. A high score on "BSC" is an indication of the respondent having self-control problems, and a low score is an indication of good self-control. The respondents' answers all lie within 13-58, and the mean is 35.77 with a standard deviation of 7.86.

¹² "In areas of new construction local authorities should be allowed to require that all houses are built with the same type of brick, painted a similar color, etc."

Table 3

| Item | Mean | Std.Dev. | Subscale |
|--|-------------|-------------|--------------------|
| For credit purchases the full price incl. interest must be disclosed | 4.62 | 0.77 | |
| Advertized price for plane tickets must include all expenses | 4.51 | 0.80 | |
| Teaching about health in school | 4.49 | 0.74 | Weak |
| Public campaigns to promote healthy lifestyle | 3.80 | 1.05 | Paternalism |
| Salt content must always be stated | 4.10 | 0.85 | Mean 36.8 |
| Information about how much salt to eat | 3.84 | 0.98 | Std.dev. 5.13 |
| Possible to self-exclude from casino | 3.86 | 1.03 | Per-question |
| Offer help to stop smoking | 3.54 | 1.28 | mean 4.09 |
| <u>Health warning text on cigarette packages</u> | <u>4.04</u> | <u>1.12</u> | |
| Reduce VAT on fruit and vegetables | 4.33 | 0.93 | |
| Salt limit in food | 3.09 | 1.23 | Strong |
| Voluntary to wear seat belt – Reversed | 4.42 | 1.14 | Paternalism |
| Voluntary to wear cycle helmet – Reversed | 2.92 | 1.39 | Mean 26.29 |
| There should be no minimum wage – Reversed | 4.13 | 1.20 | Std.dev. 4.9 |
| Scare pictures on cigarette packages | 2.99 | 1.43 | Per-question |
| Tax on cigarettes | 4.41 | 1.01 | mean 3.76 |

Wish to change

The respondents are asked if, ideally, they wish to smoke less, drink less, and exercise more. 77.8 percent of the respondents never smoke. Of the respondents who smoke 38.1 percent wish to quit, 32.3 percent wish to smoke less and 29 percent do not wish to change. Note that smokers who wish to smoke less do not include smokers who wish to quit. 81.0 percent of the respondents wish to exercise more, whereas only 20.5 percent wish to drink less.

All the variables measuring a wish to change are dummy variables. We also compute an aggregate dummy, measuring whether the respondents wish to change their behavior in at least one of the three areas: 83.3 percent of the respondents wish to do so.

People with self-control problems might be tempted to drink and smoke too much and exercise too little. Thus, we expect self-control problems to be related to whether the respondents wish to exercise more as well as to whether they wish to smoke or drink less. Table 4 shows the results of probit regressions of the “wish to change”-dummies on BSC. The coefficient for BSC is positive and significant at the 1-percent level for the general wish to change as well as for exercising more and drinking less, indicating that the respondents with less self-control are more likely to wish to change their behavior. The effects are relatively sizeable. An illustration of this is the average marginal effect for men. A one standard deviation decrease in BSC from its mean is associated with an increase by 8 percentage

Table 4

| | Wish to change | Drink less | Exercise more | Smoker | Quit smoking | Smoke less |
|------------------------------|-------------------|-------------------|-------------------|--------------------|-----------------|-----------------|
| Constant | -0.08 (0.59) | -1.37* (0.76) | -0.66 (0.58) | -1.95*** (0.58) | 0.08 (0.28) | 0.04 (0.28) |
| Female | 0.22 (0.15) | -0.04 (0.15) | 0.45*** (0.15) | -0.24 (0.14) | 0.03 (0.04) | -0.01 (0.04) |
| Age | -0.02 (0.02) | -0.02 (0.03) | -0.01 (0.02) | 0.00 (0.02) | 0.07 (0.30) | -0.46 (0.31) |
| Study area Bus./Soc. Science | -0.22 (0.15) | 0.24 (0.15) | -0.21 (0.15) | -0.21 (0.14) | 0.00 (0.02) | 0.01 (0.02) |
| Lack of self control (BSC) | 0.04*** (0.01) | 0.03*** (0.01) | 0.05*** (0.01) | 0.04*** (0.01) | -1.01 (1.20) | -0.55 (1.20) |
| N | 427 | 398 | 420 | 425 | 90 | 90 |
| Pseudo R ² | 0.07 | 0.04 | 0.08 | 0.05 | 0.01 | 0.02 |

Probit regressions. Robust standard errors (in brackets) for each variable.

Significance levels: *** 1 percent ** 5 percent * 10 percent.

BSC: lower values mean higher self control.

points of the likelihood of a wish to change one of the self-control related behaviors. Corresponding marginal effects are 6 and 9 percentage points for drinking less and exercising more, respectively. Further, BSC is significant in predicting whether or not someone smokes, with a marginal effect of around 9 percentage points. Within the group of smokers, BSC however is not significant in predicting whether someone wants to quit or smoke less.

3.2 Paternalistic regulations

This section examines how the attitude towards paternalism is related to self-control and other relevant variables. Table 5 reports the regressions of paternalism on age, gender, study area, whether the respondents think people know what is best for them, whether the respondent smokes, the respondents' pro-social attitudes, their attitudes regarding the role of the state, whether people's actions are the cause for overweight rather than bad genes, and self-control (BSC). The latter two variables are added in a second step. Furthermore, we include fixed effects for voting intentions in some specifications to show that our results are robust to the respondents' political orientation.¹³ As we are dealing with scales that are theoretically bounded by the possible minimum and maximum scores on the Likert scale, we also establish robustness of our finding using tobit regressions.

¹³ In table 5, "Voting intentions FE" indicates the inclusion of such fixed effects. Examining the relationship between voting intentions and paternalism without controlling for "strong state" and "pro-social" yields the results one would expect. Respondents who intend to vote for a left-wing party are more positive towards paternalism. Amongst the other parties only the most liberal Danish party, "Liberal Alliance", has a significant (negative) coefficient. When including pro-social attitudes and attitudes towards a strong state as measures of political orientation, the relationship between voting intentions and attitude towards paternalism becomes insignificant for all parties except for the most left-wing party "Enhedslisten".

Table 5

| | Weak Paternalism | | | | | Strong Paternalism | | | | |
|-----------------------------------|--------------------|-------------------|-------------------|--------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | (1-OLS) | (2-OLS) | (3-OLS) | (4-OLS) | (5-Tobit) | (6-OLS) | (7-OLS) | (8-OLS) | (9-OLS) | (10-Tobit) |
| Constant | 18.47*** (2.17) | 18.5*** (2.54) | 16.63*** (2.6) | 16.35*** (2.93) | 15.6*** (3.04) | 8.61*** (1.76) | 11.92*** (1.98) | 8.63*** (1.97) | 11.8*** (2.22) | 11.73*** (2.21) |
| Female | 0.97** (0.43) | 0.97** (0.44) | 1.13*** (0.45) | 1.13*** (0.45) | 1.21*** (0.46) | 1.99*** (0.37) | 1.89*** (0.36) | 2.08*** (0.37) | 2.01*** (0.37) | 2.01*** (0.36) |
| Age | 0.04 (0.05) | 0.05 (0.05) | 0.03 (0.05) | 0.04 (0.05) | 0.05 (0.06) | 0.02 (0.04) | 0.01 (0.04) | 0.00 (0.04) | -0.01 (0.04) | -0.01 (0.04) |
| Study area Bus./Soc. Science | 0.51 (0.43) | 0.55 (0.43) | 0.38 (0.44) | 0.39 (0.45) | 0.52 (0.46) | -0.4 (0.35) | -0.37 (0.35) | -0.42 (0.36) | -0.38 (0.35) | -0.37 (0.35) |
| People know what is best for them | 0.07 (0.21) | 0.05 (0.21) | 0.07 (0.22) | 0.05 (0.22) | 0.05 (0.22) | -0.43*** (0.16) | -0.51*** (0.15) | -0.44*** (0.16) | -0.51*** (0.16) | -0.52*** (0.16) |
| Smoker | -0.22 (0.58) | -0.27 (0.6) | -0.22 (0.61) | -0.29 (0.63) | -0.27 (0.63) | -1.44*** (0.46) | -1.2*** (0.47) | -1.43*** (0.48) | -1.20*** (0.48) | -1.21** (0.47) |
| Strong State Scale | 0.30*** (0.04) | 0.30*** (0.04) | 0.32*** (0.04) | 0.32*** (0.04) | 0.34*** (0.05) | 0.38*** (0.03) | 0.38*** (0.03) | 0.38*** (0.03) | 0.38*** (0.03) | 0.39*** (0.03) |
| Pro Social Scale | 0.21** (0.09) | 0.21** (0.10) | 0.26*** (0.11) | 0.27*** (0.11) | 0.29** (0.12) | -0.03 (0.08) | -0.02 (0.07) | 0.03 (0.09) | 0.03 (0.08) | 0.03 (0.08) |
| Lack of self control (BSC) | | 0.00 (0.03) | | 0.01 (0.03) | 0.00 (0.03) | | -0.06*** (0.02) | | -0.05** (0.02) | -0.05** (0.02) |
| Overweight responsibility | | -0.03 (0.37) | | -0.10 (0.37) | -0.16 (0.38) | | -0.53** (0.27) | | -0.57** (0.27) | -0.57** (0.27) |
| Voting intentions fixed effects | No | No | Yes | Yes | Yes | No | No | Yes | Yes | Yes |
| N | 414 | 410 | 404 | 400 | 400 | 414 | 410 | 404 | 400 | 400 |
| R ² | 0.31 | 0.31 | 0.32 | 0.32 | | 0.5 | 0.51 | 0.5 | 0.52 | |

Robust standard errors (in brackets) for each variable.

Significance levels: *** 1 percent ** 5 percent * 10 percent.

BSC: lower values mean higher self control.

Overweight responsibility: low values mean that people's actions (rather than their genes) are mostly the cause of too much weight.

The table includes eight different model specifications, where we divide paternalism into weak (specifications 1-5) and strong paternalism (specifications 6-10). Overall, the constant terms reveal that respondents are more positive towards weak than strong paternalism. This is presumably because strong paternalism is more intrusive and more controversial. The two different types of paternalism are therefore evaluated differently by people, and they are also differently related to the various variables as we discuss in the following.

Age, gender and study area

The regressions reveal that women are significantly more positive towards paternalistic regulations than men. This effect is particularly pronounced for strong forms of paternalism. Age and study area are not significantly related to attitudes towards paternalism. Study area is included in the regressions as a dummy indicating whether the respondents follow Business and Social Sciences (BSS) subjects.

Pro-social attitudes and role of the state

Respondents who favor a strong state and pro-social regulations also see paternalism more favorably. Comparing the regressions of weak and strong paternalism however reveals interesting differences between the two scales. Respondents who are positive towards a strong state are also positive towards both weak and strong paternalism. Respondents who are pro-social are more positive towards weak paternalism. However, they are not more positive towards strong paternalism. The pro-social scale is meant to capture a wish to help others. Therefore, it seems intuitively appealing that pro-social people want the state to be paternalistic and help those who need such help. It appears, however, that pro-social respondents are only in favor of paternalism that nudges but not paternalism that coerces.

Do people know what is best for them?

Table 5 shows that the variable "People know what is best for them" is negatively and significantly related to "Strong Paternalism", but not to "Weak Paternalism". Intuitively, if you believe people can judge what is best for them, there is little reason to interfere with their choices. The variable is not relevant for attitudes towards weak paternalism. This indicates a view that even if people generally know what is best for them they might not always have all the relevant information to make the right decisions. Therefore, people might benefit from relevant and helpful information. For example, if a person knows that it is best for him not to eat too much salt but is not sure how much salt is too much, nutrition guidelines stating the appropriate level of salt in food will benefit him.

Smoking behavior

Particularly because our measures include questions regarding smoking regulations, one could expect that a respondent's attitude towards paternalism may be influenced by whether or not he himself is a smoker. Furthermore, smokers experience a great deal of policies targeted at tobacco users, which might affect their general feeling about regulation. Hence, it is interesting to examine the relationship between smoking and attitudes towards paternalism. Table 5 shows that being a smoker has a significant and negative relation to attitudes towards strong paternalism. Again there is no relationship to weak paternalism. Because smoking may reflect a special kind of self-control problem, we will further examine these results in the next section.

Self-control

In specifications (2), (4), (5), (7), (9) and (10) we add to the regressions the variables on self-control (BSC) and the opinion about the responsibility for being overweight. A high score on BSC indicates that the respondent has low self-control. As can be seen in table 5, self-control is only significantly related to strong paternalism and the coefficient is negative. Thus, there is no evidence that respondents with self-control problems are the strongest supporters of paternalism. This leads us to reject the hypothesis that paternalistic regulations are viewed as commitment devices. The results instead reveal that people with good self-control are the most positive towards paternalism.¹⁴ Specifically, they are more positive towards strong – not weak – paternalism. Strong regulations also impose constraints on those with good self-control. Nevertheless, people with good self-control might support strong regulations precisely because these would be expected to be most effective in forcing (or strongly pushing) people with self-control problems to change their behavior.

Result: *There is no evidence that people with self-control problems are more positive towards paternalism than other people. There is a negative relation between BSC and attitudes towards strong paternalism. That is, people with good self-control are more positive towards strong paternalism than people with weak self-control.*

This result might be driven by one of the following mechanisms. People with good self-control feel that they know what is best for those who have self-control problems, and wish to impose this view on them. This mechanism would mean that purely paternalistic motives may drive the demand for paternalistic regulation. Alternatively, the result might be caused by fairness concerns. People with

¹⁴ Another specification, which we do not report for brevity, reveals that those with most self-control (a dummy for the bottom quartile of BSC) are significantly more positive (p-value 0.086) towards strong paternalism than those with least self-control (the top quartile of BSC as omitted category). However, those with middle-range self-control (dummy for the second and third quartiles of BSC) do not differ significantly in their attitudes from those with least self-control.

good self-control feel that they are doing their share for society. For that reason they think everyone else should exert good self-control as well, to limit the burden imposed on society through externalities (e.g. increased health care spending resulting from obesity).

The variable “Cause for overweight” provides another angle on attitudes towards paternalism. It captures whether a respondent thinks that overweight people mostly owe their condition to their behavior, such as lacking exercise and inappropriate diet, or mostly owe it to their bad genes. The former would indicate a view that self-control problems are the cause of being overweight. Such an opinion on the cause for overweight hence may be coupled with the view that people with low self-control should change their behavior. If this is the case, the variable “Cause of overweight” should have a negative coefficient, which is what we indeed observe for strong paternalism. But the variable is not significantly related to weak paternalism. Respondents who think that people are responsible for their behavior in self-control problems hence appear to be more positive towards regulations that force (or strongly push) these people to change their behaviors for the better. This may be because respondents are annoyed with overweight people who “choose” to behave in a way that increases health care costs for all. Another possible explanation for the negative relation between “Cause of overweight” and paternalism is that paternalistic regulations only make sense if behavioral changes have the desired effect. If weight problems were mostly due to bad genes and diet did not affect a person’s weight much, there would be less of a reason to try to get people to live different lifestyles.

3.3 Smoking regulations

This section examines the relationship between smoking behavior and attitudes towards (paternalistic) smoking regulations. A study by Hersch (2005) found evidence that smokers, who want to quit, value smoking restrictions more than others.

In the following, we investigate whether smokers who wish to quit or smoke less are more positive towards smoking regulations than smokers in general¹⁵. Specifically, four of the questions measuring attitudes towards paternalism and two of the questions measuring the attitudes towards the role of the state touch upon tobacco-related policies:

- Whether the state should provide help to smokers wanting to quit (“Help”).
- Whether cigarette packets should have a text warning about the risks of smoking (“Text”).
- Whether cigarette packets should have scare pictures of corpses, lungs etc. (“Pictures”).

¹⁵ Similar to Hersch (2005), we find that, relative to smokers, nonsmokers are significantly more favorable towards “Texts” (10-percent level), “Pictures”, “Tax”, “Restaurant”, “Workplace” (all significant at 1-percent level).

- Whether cigarettes should be taxed (“Tax”).
- Whether there should be a smoking ban in restaurants (“Restaurant”).
- Whether there should be a smoking ban in workplaces (“Workplace”).

“Help” was categorized as a weak regulation, whereas “Text”, “Pictures”, and “Tax” were seen as strong regulations. Finally, the “Restaurant” and “Workplace” were included in the strong state scale. These questions are primarily about whether or not the state should regulate externalities. However, smoking bans could also work as commitment devices to help people quit, or at least reduce, smoking. In particular, Hersch (2005) used similar questions regarding whether it should be legal to smoke in public areas. Examining how smoking behavior is related to these questions allows us to see if we can replicate results from the study by Hersch.

These regulations are not perceived differently by smokers who either want to quit or reduce smoking than by smokers in general (control variables are included¹⁶). That is, smokers do not appear to see these regulations as a commitment device. Smoking bans in restaurants are the only exception. Those who want to smoke less have a more positive attitude towards such bans than smokers in general (significant at the 10-percent level). This indicates that such bans are valued as a commitment device that help a person reduce smoking. However, for smokers who want to quit there is no significant effect. This suggests that such bans are thought of only as a partial commitment device.

At first glance, it seems surprising that those who wish to quit are not relatively more favorable towards policies such as cigarette taxes. There is evidence that smokers, especially adolescent smokers, are responsive to higher cigarette prices (see Gruber 2001 for a review). Such taxes make people happier for whom the prediction is that they are likely to become smokers (Gruber and Mullainathan 2005). However, some heterogeneity exists. People from a lower socioeconomic background are more responsive to cigarette prices than people from a higher socioeconomic background (Townsed et al. 1994, Gruber and Koszegi 2004). Azagba and Sharaf (2011) find that the middle age group (25-44) is unresponsive to prices, and Fletcher et al. (2009) observe that smokers with low self-control are especially unresponsive to cigarette prices.

Thus, one explanation for our results is that the participants of our survey belong to a group that might not be very responsive to cigarette prices (high educational attainment and in a middle age bracket; see Townsend 1994) and therefore do not value price-related regulations such as taxes. Alternatively,

¹⁶ For the control variable “strong state” we excluded the two questions on smoking bans in workplaces and restaurants.

our results may indicate that cigarette prices are not an effective commitment device per se. In a theoretical model, Gul and Pesendorfer (2007) show that a price policy offers no commitment because it does not eliminate the most tempting alternative. For a given level of consumption of cigarettes the price policy reduces the consumption of other goods and hence leads to lower welfare. But, at the same time, as cigarettes are a normal good, a higher price does decrease demand. That is, even if a policy reduces cigarette demand, this cannot be taken as an indication that the policy “works” in the sense of welfare improvement. In contrast, a prohibitive policy that eliminates tempting alternatives, such as a smoking ban, can serve as an effective commitment device, and it can thereby increase welfare (Gul and Pesendorfer, 2001).

4 Conclusion

Self-control problems can lead people to behave in a suboptimal fashion, which imposes costs on both the individual and society. Therefore many argue that there is a case for state intervention. This paper investigates attitudes towards such paternalistic regulation. We investigate whether attitudes towards paternalism are related to a person's perception of self-control. Specifically, we ask whether paternalistic regulations are demanded by the people who need them as a device for self-commitment, or whether they are demanded by people with good self-control, thereby imposing the view of one group on another.

The respondents in our survey are generally positive towards paternalism, and appear to be more positive towards weak than strong paternalism. Attitudes towards weak and strong paternalism are not related to the same variables though. Respondents who are positive towards a strong state and in favor of pro-social regulations are in turn more positive towards weak paternalism. Similarly, those who favor a strong state also support strong paternalism. Support for strong paternalism is lower among smokers and those who believe that people know what is best for them and those who believe that overweight people's bad genes (rather than bad actions) are the main cause of that condition.

We do not find evidence that respondents with self-control problems are more positive towards paternalism, as would be the case if they perceived the regulations as a way to self-commit. Furthermore, an examination of smoking regulations provides little evidence of these regulations being perceived as effective commitment devices for smokers who wish to quit or smoke less. The only exception is a smoking ban in restaurants.

However, we find that respondent with good self-control are more positive of strong paternalism. Thus, strong paternalism appears to be demanded by those with good self-control, which might be explained on the ground of pure paternalistic concerns (to "help" others behave optimally) or on the grounds of fairness concerns (to prevent those with lack of self-control from imposing an unfair burden on others).

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Appendix A: The questionnaire (translated from Danish)

I. First, please answer some general questions.

1. What is your gender?
2. What is your age?
3. A few questions about study area and when studies were started.

II. The following questions concern your attitudes to politics, health and economy.

Enter your attitudes to the following statements. (Scale: (1) Strongly disagree, (2) Disagree somewhat, (3) Neither agree/nor disagree, (4) Agree somewhat, (5) Strongly agree)

1. People themselves know what is best for them.
2. People do not always do what is best for them.
3. It is no use worrying about politics and society. I cannot do anything about it anyway.
4. Everyone should contribute to the community by spending some of their time volunteering.
5. Denmark would be better off if we did not have so many elections (primary elections, municipal elections, etc.) and if people did not have to vote so often.
6. It is everyone's duty to do his job as best as possible.
7. I have often done volunteer work.
8. I feel very guilty when I do not complete a task I promised I would complete.

People have different opinions about what role government should play in regulating welfare, personal life and business life. For example, some believe that lifestyle can affect health and that the public therefore must seek to influence Danes to live healthier, while others believe it is people's own responsibility. Enter your attitudes to the following statements.

9. The government should run campaigns to get Danes to live healthier.
10. People should have access to publicly funded health care even if they do things that harm their health.
11. Value-added tax (VAT) on fruit and vegetables should be reduced (i.e., when you buy fruits and vegetables, for example, you should only pay 10% tax and not 25% as now).
12. There should be requirements for the size and shape of fruit and vegetables sold in stores.
13. There should be a limit to how much salt foods can contain.
14. The salt content in food should always be clearly indicated.
15. The government should inform Danes about the maximum amount of salt they should be eating.

16. The government should offer smokers help if they want to stop smoking.
17. Cigarette packs should have texts on them that warn against some of the harmful effects that smoking can have.
18. Cigarette packs should have on them scare-images, for example of lungs damaged by smoke, corpses and the like.
19. Cigarettes should be taxed.
20. It should be allowed to smoke in restaurants.
21. It should be up to individual companies whether employees are allowed to smoke in the workplace.
22. Primary schools ought to teach nutrition and health, so that everyone gets a basic knowledge of how to live healthily.
23. It should be voluntary whether or not you are using the seat belt when driving a car.
24. It should be voluntary whether or not you wear a helmet when cycling.
25. If a product is purchased on credit, it should be required that the consumer is always given the total price (purchase price plus interest).
26. When an airline advertises prices on flights, it ought to advertise the full price, which includes taxes, charges for check-in, luggage and the like.
27. Everyone shall have the opportunity to exclude themselves from gambling at a casino for a period of time by recording this desire with the casino.
28. People should be able to decide for themselves what wages they are willing to work for, so there should be no minimum wage.
29. The government should provide decent housing for those who otherwise cannot afford it.
30. The government should reduce income differences between the rich and the poor.
31. There should be strict laws to get industry to do less harm to the environment, even though this may lead to price increases.
32. The more a private car pollutes, the higher the tax on it should be.
33. It should be an offense to throw rubbish on the street.
34. In areas of new construction local authorities should be allowed to require that all houses are built with the same type of brick, painted a similar color, etc.
35. State regulation of businesses should be reduced.
36. The market offers reasonable prizes without government interference.
37. The government should prevent firms from pushing up prices.
38. The government should ensure that monopolies do not exploit their market power, even if this results in more paperwork for the businesses.

39. The government should ensure that people working in different companies, but doing the same type of work, earn the same salary, regardless of how the company is doing.
40. The government should give grants for projects to create new jobs.
41. The government should provide aid to ailing industries to secure jobs.
42. The government should provide support to industry to develop new products and new technology.
43. When children do well in school, is this then primarily because they work hard or are intelligent? (Scale: (1) Only because they work hard, (2) Mostly because they work hard, (3) both are equally important, (4) Mostly because they are intelligent, (5) Only because they are intelligent)
44. When students do well in university, is this then primarily because they work hard or are intelligent? (Scale: (1) Only because they work hard, (2) Mostly because they work hard, (3) both are equally important, (4) Mostly because they are intelligent, (5) Only because they are intelligent)
45. When people are overweight is it mainly because they have an unhealthy lifestyle or they have bad genes? (Scale: (1) Only because they have an unhealthy lifestyle, (2) Mostly because they have an unhealthy lifestyle, (3) both are equally important, (4) Mostly because they have bad genes, (5) Only because they have bad genes)
46. If there were elections to the parliament today, who would you vote for?

III Indicate how well the following statements describe you as you typically are.

1. I am good at resisting temptation
2. I do certain things that are bad for me if they are fun
3. I have a hard time breaking bad habits
4. I wish I had more self-discipline
5. I am lazy
6. I say inappropriate things
7. Pleasure and fun sometimes keep me from getting work done
8. I have trouble concentrating
9. I am able to work effectively toward long-term goals
10. Sometimes I can't stop myself from doing something even if I know it is wrong
11. I often act without thinking through all the alternatives
12. People would say that I have iron hard self-discipline
13. I refuse things that are bad for me
14. Sometimes I am not as dependable or reliable as I should be.

15. I never seem able to get organized.

IV Please now make a few decisions about payments of money.

These payments are hypothetical, but you should respond as though you were actually faced with having to make these decisions. There are no right or wrong answers.

1. You can choose between receiving an amount today, or 1,000 DKK in a month. Enter the smallest amount you would accept to get today instead of the 1,000 DKK in a month. (10 options between 500 DKK and 1,000 DKK today)
2. You can choose to receive an amount in 12 months, or 1,000 DKK in 13 months. Enter the smallest amount you would accept to get in 12 months instead of the 1,000 DKK in 13 months. (10 options between 500 DKK and 1,000 DKK today)

Imagine that you win ten gift certificates, each of which can be used once for a "dream restaurant night." On each of these evenings, you and a companion get the best table and unlimited amounts of food and drinks at a restaurant of your choice. You will have no expenditure: all payments incl. gratuities are included. The gift certificates can be used immediately, starting tonight, and there is a guarantee that they can be used at any restaurant you choose. They must be used within two years. After this they become invalid. You cannot resell the gift certificates.

3. How much would these gift certificates (the 10 gift certificates in total) be worth to you? (Options: less than 500 DKK, 500-5,000 DKK, more than 5,000 DKK)
4. How many of the 10 gift certificates would you ideally prefer to use, respectively, in year one and two?
5. Some would be tempted to deviate from their ideal distribution. Which of the following best describes you?

Option 1: I would be tempted to save more gift certificates for the second year than what is ideal
Option 2: I would not be tempted in any direction

Option 3: I would be tempted to use more gift certificates in the first year than what is ideal

6. How many gift certificates do you think you would actually end up using, respectively, in year one and year two?

V The last questions concern your lifestyle.

1. How many alcohol units do you consume in a typical week? A unit corresponds to a regular beer, 4 oz of hard liquor or a glass of wine (about 1/6 of a bottle).
(Options: 0-7, 8-14, 15-21, more than 22, I do not drink, I do not want to answer)

2. Ideally would you wish that you drank more or less? (Options: More, Less, I do not want to change my behavior)
3. How often do you do physical activity for at least 20 minutes that causes you to sweat or become breathless? (Options: Daily, Several times a week, Several times a month, Once a month or less often, Never, I do not want to answer)
4. Ideally would you wish that you exercised more or less? (Options: More, Less, I do not want to change my behavior)
5. How often do you smoke cigarettes? (Options: Daily, Several times a week, Several times a month, Once a month or less often, I do not smoke, I do not want to answer)
6. Ideally would you wish that you smoked more or less? (Options: More, Less, I want to quit smoking, I do not want to change my behavior)

Appendix B: Alternative measures of self-control

There exist several instruments to measure self-control. In a meta-analysis, Duckworth and Kern (2011) examine the convergent validity of different self-control measures from the field of personality psychology. The instruments evaluated can be divided into personality questionnaires and task measures. The task measures are further divided into executive function tasks and delay of gratification tasks. Overall, Duckworth and Kern find moderate convergence across self-control measures. They find personality questionnaires to have the strongest evidence of convergent validity, both within and across types. They are not able to test whether certain subtypes of questionnaires demonstrate stronger convergent validity than others. The weaker evidence of convergent validity for task measures points to substantial random and task-specific error variance, which is especially problematic for executive function tasks according to the authors. They conclude that researchers facing time and budget constraints might be advised to choose a single informant or self-report questionnaire, because of the stronger evidence of convergent validity. The multiple measures in personality questionnaires reduce error variance, and the response to any particular item implicitly asks the respondent for an aggregate judgment of behavior across multiple situations and observations. The authors believe that the optimal measurement strategy might be to include both task and questionnaire measures.

As alternative measures of self-control our questionnaire also included hypothetical questions of delayed gratification with monetary payments (for an overview see Frederick et al. 2002; the version used in our survey is based on Burks et al. 2009), and hypothetical questions about consumption.

The respondents are asked what the lowest amount is that they would accept today instead of 1,000 DKK (about 170 USD) in a month. Then they are asked the lowest amount they would accept in a year instead of 1,000 DKK in 13 months. Respondents choose from a list where amounts range from 550 DKK to 1,000 DKK in increments of 50 DKK, giving them 10 different options. An indication that a respondent has a taste for immediate gratification would be if the amount asked for the first choice (today versus one month from now) is lower than the amount asked for in the second choice (12m versus 13 months).

According to personality psychologists self-control is related to conscientiousness, which is one of the “big five” personality measures (Ameriks et al. 2007). Therefore, we additionally include two standard questions measuring conscientiousness from Costa and Widiger (1994): “Sometimes I am not as dependable or reliable as I should be” and “I never seem able to get organized”. Both questions are also used by Ameriks et al. (2007), who in their data find a strong relation between self-control and these conscientiousness measures.

In addition, Ameriks et al. (2007) developed a measure of self-control using hypothetical questions about consumption, which we also included in the questionnaire. They ask how the respondents would allocate a prize of 10 vouchers for a “dream restaurant night” between two years. The respondents report how they would ideally allocate the vouchers, whether they would be tempted to deviate from this ideal allocation and how they think they would actually end up allocating the vouchers in the end.

All the above measures are less powerful than the BSC measure. Specifically, there is no significant correlation between the question measuring conscientiousness or a wish to change and the self-control measure based on the delay of gratification task. The measure based on the consumption question is related to whether or not the respondents wish to change one of their behaviors (exercising, drinking, smoking). The relations are positive and significant at least at the 10-percent level.

Our measures are based on hypothetical questions and might work better if incentivized. However, Andersen et al. (2011) did not find evidence of self-control even in an incentivized Danish study using choices of delayed monetary payments. And in a recent paper Dohmen et al (2012) administer different incentivized measures of time preferences to the same person, showing that these fail to produce mutually consistent estimates of discounting functions. The delay of gratification measure can

further be criticized on the ground that it is based on monetary payments instead of immediately available consumption.

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