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SCIENTIFIC PAPER

THE ROLE OF MENTAL BUDGETING IN HEALTHY FINANCIAL BEHAVIOR: A SURVEY AMONG SELF-EMPLOYED ENTREPRENEURS

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Abstract: *Self-employed entrepreneurs (without personnel) manage their business and household finances at the same time. Both domains tend to interact with each other. In this study, it is studied whether and how self-employed entrepreneurs manage their finances. More specifically, the role of mental budgeting and time orientation in healthy financial behavior is studied.*
Mental budgeting is a way to manage expenses. It entails setting budgets, making reservations on budgets, compensating after too much spending on a budget, and non-fungibility (treating money as earmarked and categorized). It can be expected that self-employed entrepreneurs using mental budgeting strategies behave in a more healthy financial manner.
Survey data were collected among self-employed people without personnel in The Netherlands. The survey contained, among others, questions about the company, time orientation, financial management, tax attitude, reported tax compliance, and concern or worry about the future. Questions were factor analyzed using principal component analyses. The resulting scales were used for further analyses. Regression analyses were performed to predict concern or worry about finances, financially restricting to and exceeding budgets, and reporting tax compliance.
In this paper, two components of time orientation are distinguished: awareness of consequences and carelessness about the future. From these components, four orientation types of self-employed people were obtained. The orientation type focusing on long-term consequences shows more healthy financial behavior, whereas the orientation type focusing on the present and less on consequences shows less healthy financial behavior. Responsible and healthy financial behavior of self-employed entrepreneurs is related to focusing on long-term consequences, using mental budgeting, and keeping one's budgets.
Aspects of mental budgeting are predicting worry about business finances. Differential effects of mental budgeting were found on restricting one's budgets, and exceeding budgets, respectively. Of two measures of future circumstances (work disability, pension), only pension measures were predicting worrying about finances. Mental budgeting was not related to tax compliance, except for fungibility. Past tax behavior is predictive of other (past) tax behaviors. Fiscal history measures prove to be correlated with present measures.

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1 The views and expressions in this paper are those of the author and do not reflect the official policy of the Netherlands Tax and Customs Administration.

INTRODUCTION

For self-employed entrepreneurs, the goal of responsible financial behavior is to continue the company, make it profitable, and to improve personal financial well-being. This contributes to society, in the sense that people with responsible financial behavior are less likely to have financial problems such as problematic debt, and are less likely to have health problems such as anxiety and depression (Gathergood, 2012a). Financial problems may also cause disagreement and conflict between partners (Kirchler, Rodler, Hölzl, & Meier, 2001). Further, worrying about financial problems takes away mental resources and may cause lower performance at work. Financial knowledge (literacy), skills, and advice from experts could improve happiness and financial well-being of the household. Financial well-being may be defined as a state of security and certainty that financial matters are well-organized and effective for attaining goals of the business and the household.

A tool for responsible financial behavior is mental budgeting, as a way to obtain an overview of and to control expenses for different budgets or expenditure categories (Antonides, De Groot, & Van Raaij, 2011). Aspects of mental budgeting were identified and used to predict financial behaviour. More specifically, in this paper, the determinants ate investigated of concern and worrying about business obligations, financially restricting to and exceeding budgets, and tax behavior for self-employed entrepreneurs without personnel.

Responsible financial behavior

Financial behavior can contribute to attaining the (life) goals of the business and the household. These goals can be: (1) that the company will not go bankrupt (preventive goal), (2) maintaining or reaching financing the continuation of the business and the household (maintenance goal), (3) financing future business and household purchases through saving and

credit, and (4) becoming wealthy (promotional goal) (Zhou & Pham, 2004). In the ideal case, responsible financial behavior is based on a financial plan for reaching life and business goals, and optimizing income and expenditure over the life cycle. Or defined even more broadly: responsible financial behavior is maximizing lifetime utility, based on trade-offs between business and household finances, between spending, saving and investing, and managing financial assets. For self-employed people, responsible financial behavior is thus based on a combination of business planning, life planning, and financial planning (Van Raaij, 2016).

The consequences of responsible financial behavior are both at the individual and the societal level. Responsible financial behavior should improve financial well-being and happiness of self-employed people and their household (Gathergood, 2012a). A societal consequence of responsible financial behavior is a lower need for assistance and financial support to solve debt problems. People without financial problems also perform better at work, because they worry less about money problems (Gathergood, 2012a).

Self-employed entrepreneurs

Self-employed people constitute a growing group of people in Dutch society. Self-employed entrepreneurs (persons who own a one-person company without personnel) usually run their business from home, such as farmers and craftsmen, or from a collective business office with facilities such as computer/IT, and secretarial services. Compared to employees, it is more likely that business and household finances of the self-employed are interrelated or sometimes even mixed-up. This implies that they may "borrow" money for business purposes from their household budget and vice versa. In other words, self-employed entrepreneurs operate in two domains: as a citizen with household finances and as an entrepreneur with business finances. Not only the borderline between the roles, 'citizen' and 'entrepreneur', may be weak. The borderline between the respective finances may be weak too, or at least less distinct and separate. Consequently, the two financial domains and associated behaviors may be more interrelated. For example, concern about money in one domain may have impact on financial behavior in the other domain.

Self-employed entrepreneurs come from all ages, different stages in life, and have different motives for being self-employed. Some self-employed are officially retired and have both pension and business income whereas others have a job as an employee and work part-time for their employer and part-time for their own business. Due to the economic crisis and job loss, more people are part-time or full-time self-employed. Between 2007 and 2016, the number of self-employed people in The Netherlands increased with 71 percent (Statistics Netherlands, 2016), from 691,855 in 2007 (65 percent of all entrepreneurs) to 1,185,170 (77 percent of all entrepreneurs) in 2016. Of all those years, the increase in the number of self-employed was highest (2 percent) in 2009. One explanation could be that in 2008, at the depth of the financial crisis, many people lost their jobs and continued as self-employed. This may explain the high increase in 2009.

Self-employed people may differ in how they pay themselves their income. Some self-employed entrepreneurs assign themselves a fixed monthly salary from their own business. For income tax reasons, this salary may be kept low so that most money remains in the company. Other self-employed entrepreneurs may mix up their business and household money. For example, if the business income is high during a period, they pay themselves more personal income than during periods when business income is low. In other words, their household income is correlated with the business income. According to economic theory, self-employed entrepreneurs should allocate their household income based on the average business income of a mid-term period (2 to 3 years). This is according to the permanent income hypothesis by Friedman (1957). This means the self-employed should save during the "fat years" in order to use their savings during the "lean years." However, the problem is that it is often difficult to predict future business income and thus the "average" allocation of money to the household.

Self-employed entrepreneurs are doing both the financial affairs of their business and their household. In both domains, self-employed people should make ends meet, pay bills and taxes in time (short-term), make reservation for the future, such as job or labor disability insurance, save for pension and retirement, and decided on business investments (long-term). Compared with employees with a fixed income, self-employed entrepreneurs are a growing but less researched group in society.

SAMPLE

The sample was drawn from a panel containing 20,000 companies in The Netherlands. For this study, two separate samples were drawn. The first subsample consisted of 1,617 self-employed entrepreneurs who had been active with their business for more than three years ('non-starters'). The second subsample consisted of 2,595 entrepreneurs with company size varying from 1 to 4 persons. It was unknown from these respondents how long they had been active with their company. People in this second subsample were screened on whether they were self-employed (no personnel) and whether they had been in business for less than three years ('starter'). If people in the second subsample did not meet these two criteria, they were not eligible for the survey and considered as 'non-sample' from the second subsample.

The total net sample consisted of 654 self-employed entrepreneurs without personnel (response rate of 16%). The sample was representative with respect to age, gender and education level. Twenty-eight percent were 'starters'. The other 72% were 'non-starters'. The mean age was 49 years, with more men (66%) than women in the sample. The low response rate was due to (1) high non-sample in the second subsample (i.e. people were not self-employed and/or not a starter) and (2) non-response in both subsamples (people who did not fill out the questionnaire). In the final sample,

only self-employed entrepreneurs without personnel have been included. The respondents answered the questionnaire by computer-assisted web interviewing (CAWI) in February-March 2013. The questionnaire took about 15 minutes to fill out.

MEASURES

The focus is on variables that are indicative of responsible ('healthy') financial behavior. These variables are: mental budgeting (restricting and exceeding financial budgets), time orientation with respect to finances, concern or worry about financial obligations, and tax behavior (both attitudinal and reported tax compliance).

Time orientation. Time orientation is usually seen as either short-term (myopia) or long-term orientation. Long-term orientation includes considering future consequences of present behavior. It also includes accounting for the future, such as saving or insuring for job/work disability and retirement (pension). Time orientation was measured by the agreement with statements such as "When I make a decision, I think about how it will affect my future", "With regard to the future one should always consider that things could go worse" and "The future will take care of itself." *(5-point Likert scales with 1=completely disagree to 5=completely agree)*.

Mental budgeting. Mental budgeting is a way to control expenses (Antonides et al., 2011). In mental budgeting, expenditure categories are distinguished, labeled, and monetary budgets are allocated to these categories. This is often done for fixed (e.g., monthly) periods, because income (of employees) usually comes in fixed (monthly) payments. Also, many expenditure categories such as rent and mortgage payments, or subscriptions are monthly payments. Generally, people try not to overspend on their monthly budgets. Mental budgeting activities were measured by statements such as "I always keep an amount of money in my bank account for unforeseen expenses", "I always reserve money for a number of expenditures" and "I always reserve money in case the tax administration requires me to pay taxes." Respondents indicated to which degree these statements applied to them *(5-point scales with 1=does not apply to me at all to 5=applies to me a lot)*.

Concern or worry about business finances. The questionnaire contained three statements about financial concern: "I worry that I cannot pay my business bills", "I worry that my business means [capital] will be depleted", and "I worry that I cannot afford business expenses." It is assumed that self-employed entrepreneurs who apply mental budgeting to control their expenses, worry less about money than people who do not apply mental budgeting. Respondents indicated to which degree the statements applied to them *(1=does not apply to me at all to 5=applies to me a lot)*.

Overdraft. Bank overdraft (being in the red) of the business account was measure by "Is your business account ever overdrawn?" *(three response options: yes, but mostly the amount is lower than my income; yes, and sometimes the amount is higher than my income; no, never)*.

Escalation of commitment. This was measured by four statements, reflecting whether people take earlier expenses into account when making financial decisions. Examples of these statements are "It often happens that I spend more money than planned" (exceeding the budget) and "When I make an investment, I set a fixed amount in advance" (restricting the budget). Respondents indicated to which degree the statements applied to them *(1=does not apply to me at all to 5=applies to me a lot)*.

Tax behavior. Tax behavior was measured by attitudes towards paying taxes, and past tax behavior. Tax attitudes (tax morale) were measured with three statements: "How important is it for you that the tax administration receives the company's tax return in time?", "How important is it for you that the tax administration receives correct and complete tax returns" and "How important is it for you that when money must be paid to the tax administration, it is paid in time?" *(1=very unimportant to 5=very important)*. Past tax behavior was measured by asking whether the tax administration had taken measures due to late payment, due to late tax filing and whether there has been a payment scheme arrangement during the past three years *(yes; no; don't know)*.

Measures for pension saving and work disability. Respondents were asked whether they had taken measures for their pension and retirement income, and measures such as taking insurance for work disability *(yes; no; don't know)*.

ANALYSIS AND RESULTS

Scale construction

All rating scale items were subjected to principal component analysis (PCA) with either varimax (orthogonal) rotation or oblimin (non-orthogonal) rotation. Varimax rotation provides non-correlated (independent) components, whereas oblimin rotation provides correlated components. For all scales, a scale index (scale score) has been calculated by taking the average of the statements that constitute the respective scales (Table 1). For all scales, higher scale scores are indicative of 'more of' what the scale intends to measure (i.e., how the scale is labeled). For example, a *higher* index score on the fungibility scale means that money is considered as *more* fungible (more "free floating" and less restricted to a budget) than for a lower index score. Likewise, a high worry score implies more worry about finances than a low score.

The principal components analysis of the time orientation statements yielded two independent components after a varimax rotation. The first component has been labeled ***awareness of consequences*** (Cronbach's alpha = .66) with four statements *with 1 = low to 5 = high awareness of consequences*:

- When I make a decision, I think about how it will affect my future.
- With regard to the future, one should always take into

account that things could go worse.
- With everything I do, I think about the immediate consequences.
- It is important for me to save some money for later.

The second component of time orientation was labeled ***carelessness about the future*** ($r = .30$, $p < .01$) and was constructed from the following two statements *with 1 = low carelessness (thus being careful) to 5 = high carelessness*:
- I think that the future will take care of itself.
- I ignore warnings about future problems, because I think that these problems will be solved automatically.

The principal components analysis of the mental budgeting statements yielded three correlated components after an oblimin rotation. The first component was ***making reservations*** (Cronbach's alpha = .81) and consisted of the following five statements *with 1 = low to 5 = high on making reservations*:
- I always keep an amount of money in my bank account for unforeseen expenses.
- I always keep an amount of money in my bank account for nondiscretionary expenses.
- When I expect a particular expenditure, I reserve money for this.
- I have reserved money for different expenditures.
- I always reserve money in case the tax authority requires me to pay an after tax.

The second component of mental budgeting was interpreted as ***compensating*** ($r = .65$, $p < .01$) and consisted of the following two statements *with 1= low to 5= high on compensating*:
- When I have too many expenses within a specific budget in a particular period, I will spend less of this budget in the remainder of the period.
- When I have too many expenses within a specific budget in a particular period, I will spend less of this budget in the next period.

The third component of mental budgeting has been labeled ***fungibility*** (Cronbach's alpha = .73). Fungibility means that money is "free floating" (only one budget) and money is not earmarked for a particular category or budget. This component was formed by the following three statements *with 1 = low to 5 = high on fungibility*.
- Sometimes I spend money reserved for a particular category on another category.
- When I am short of money for my business, I sometimes use money reserved for something else.
- I seldom spend money reserved for a particular category on another category.[1]

Oblimin rotation is non-orthogonal. This means that the three mental budgeting components are not independent of each other but correlated. The correlation between making reservations and compensating is .365 ($p < .01$). The correlation between making reservations and fungibility is –.460 ($p < .01$). The correlation between compensating and fungibility is –.084 ($p < .05$). Thus, the more people make reservations, the more they compensate, and the less they consider money as fungible. The last correlation implies that the more people use compensating strategies, the less they consider money as fungible (i.e., more non-fungible).

The component ***concern or worry about business financial obligations*** (Cronbach's alpha = .91) was constructed from the following financial concern or worry statements *with 1 = low to 5 = high on concern or worry*:
- I worry that I cannot pay my business bills.
- I worry that my financial business means will be depleted.
- I worry that I cannot afford business expenses.

The principal components analysis on the statements on escalation of commitment yielded two components. The ***financial restriction*** (and adhering to budget limits) component ($r = .30$, $p < .05$) consists of the following items *with 1 = low to 5 = high on restriction*:
- When deciding on whether to invest or not, I take previous related investments into account.
- When I make an investment decision, I set a fixed maximum amount in advance.

The ***financial exceeding*** component ($r = .48$, $p < .05$) consists of the following two statements *with 1 = low to 5 = high on exceeding*:
- It often happens that I spend more money than I planned.
- I find it hard to stop spending money on something of which I am not sure whether it will yield a gain.

The principal components analysis of the tax attitude items yielded one component ***tax morale*** (Cronbach's alpha = .88) based on the following statements *with 1 = low to 5 = high on tax morale*:
- How important is it to you that the tax authority receives the company's tax return in time?
- How important is it to you that the tax authority receives correct and complete tax returns?
- How important is it to you that when money must be paid, the tax authority receives the money in time?

Note in Table 1 that fungibility, worry about finances, and financial exceeding are relatively low in this sample. Low fungibility is a good sign, because many self-employed entrepreneurs seem to categorize and earmark their money into budgets. And the level of concern or worry about finances among the self-employed entrepreneurs is not very high. Financially exceeding limits and budgets is also low. This is an indication that many self-employed entrepreneurs adhere to their budgets. And note that awareness of consequences, making reservations, and keeping (restricting to) budgets are relatively high in this sample. Many self-employed entrepreneurs seem to think about the consequences of their behavior, many make reservations (budgets) for future contingencies, and keep their budgets.

1 Reversed coding for calculating scale scores.

	n	Mini-mum	Maxi-mum	Mean	Standard deviation
1. Aware of consequences	654	1	5	3.76	0.62
2. Careless about the future	654	1	5	2.85	0.78
3. Making reservations	654	1	5	3.66	0.84
4. Compensating	654	1	5	3.47	0.90
5. Fungibility	654	1	5	2.49	0.87
6. Concern or worry about finances	654	1	5	2.52	1.17
7. Financial restriction	654	1	5	3.60	0.87
8. Financial exceeding	654	1	5	2.09	0.85
9. Tax morale	654	1	5	4.21	0.80

Table 1. Descriptive statistics of the computed scales.

Defining orientation types

Based on the two components derived from the time orientation statements (aware of consequences and careless about the future) a new variable was computed based on individual scale scores with respect to the sample means of these two components (below or equal to the mean vs. above the mean). This yielded four orientation types (Table 2). A1 and B1 respondents have scores below or equal to the mean, whereas A2 and B2 respondents have scores above the mean. The four orientation types may be described as follows:

Type 1 respondents focus on the future, but are less aware of the consequences of their behavior and decisions. **Type 2** respondents focus on the future and are highly aware of consequences. In other words, they focus on long-term consequences. For Types 1 and 2, it is assumed that low carelessness about the future is the same as care and concern about the future. **Type 3** respondents focus less on the future and are less aware of consequences. Respondents classified as **Type 4** focus less on the future, but are highly aware of consequences. Thus, they focus more on short-term consequences.

	Awareness of consequences (A)	
Carelessness about the future (B)	**Low (A1)**	**High (A2)**
Low (B1)	**Type 1 (19%) Focus on future, and less on consequences**	**Type 2 (24%) Focus on long-term consequences**
High (B2)	**Type 3 (36%) Focus on present, and less on consequences**	**Type 4 (21%) Focus on short-term consequences**

Table 2. Four orientation types (n=654) based on awareness of consequences (A) and carelessness about the future (B).

60 Percent of the respondents are of Type 2 and Type 3 (Table 2). This concerns the well-known bipolar distinction between future-time (Type 2) *versus* present-time (Type 3) orientation. About 40 percent of the respondents are classified in the 'odd' Types 1 and 4 with focus on the future but less on consequences (Type 1) and focus on short-term consequences (Type 4), respectively. The four types are used in further analyses to check whether 'orientation type' affects financial behavior.

Financial behavior and orientation types

For each scale it was checked whether there was an effect of orientation type. Mean and standard deviations of the scores for each orientation type are given in Table 3.

Financial behavior	**Type 1**	**Type 2**	**Type 3**	**Type 4**
Making reservations	**3.49** [a]	**3.99** [b]	**3.37** [a]	**3.95** [b]
	(0.77)	**(0.76)**	**(0.86)**	**(0.73)**
Compensating	**3.41** [a,b]	**3.63** [b,c]	**3.28** [a]	**3.68** [c]
	(0.85)	**(0.92)**	**(0.85)**	**(0.92)**
Fungibility	**2.65** [b]	**2.18** [a]	**2.62** [b]	**2.46** [b]
	(0.79)	**(0.86)**	**(0.83)**	**(0.93)**
Worry about finances	**2.51**	**2.34**	**2.53**	**2.69**
	(1.14)	**(1.14)**	**(1.08)**	**(1.35)**
Financial restriction	**3.47** [a,b]	**3.90** [c]	**3.41** [a]	**3.70** [b,c]
	(0.85)	**(0.82)**	**(0.80)**	**(0.95)**
Financial exceeding	**2.16** [b]	**1.84** [a]	**2.23** [b]	**2.06** [a,b]
	(0.81)	**(0.80)**	**(0.88)**	**(0.84)**
Tax morale	**4.16** [a,b]	**4.36** [b,c]	**4.03** [a]	**4.39** [c]
	(0.80)	**(0.74)**	**(0.80)**	**(0.78)**

[a, b, c] **means with different superscripts differ significantly (rowwise)**

Table 3. Mean scores of financial behavior per orientation type (standard deviations in parentheses).

Making reservations. There is a significant main effect of orientation type on making budget reservations (F (3, 650) = 27.55, p = .000). Types 1 and 3 have significantly lower reservation scores than types 2 and 4. Thus, people focusing less on consequences make less budget reservations than people focusing more on consequences.

Compensating. There is a significant main effect of orientation type on compensating behavior (F (3, 650) = 8.20, p = .000). Type 3 respondents have significantly lower compensation scores than type 4 respondents. Both types are careless about the future. Thus, people with a low awareness of consequences show less compensation behavior than people with a high awareness of consequences.

Fungibility. The main effect of orientation type on fungibility is significant (F (3, 650) = 9.96, p = .000). Type 2 respondents have a lower fungibility score than the other three types. Thus, people who care about the future and are aware of consequences consider money as less fungible than the other three types. They adhere more to their budgets (i.e., spend according to the budget label) than the other three groups.

Concern or worry about business finances. No significant main effect has been obtained on the extent to which the four orientation types worry about their business finances (F (3, 650) = 2.17, $p < .10$). Thus, the extent to which people care about the future and are aware of the consequences of their decisions, does not affect how much they are concerned and worry about their business finances. Note that the standard deviations of worrying are higher than the standard deviations of the other scales (Table 3). There are more differences between respondents on worrying than on the other variables.

Financial restriction. The effect of the four types on financial restriction and adhering to financial limits is significant (F (3, 650) = 11.93, p = .000). Mean restriction scores are significantly higher for Type 2 than for Type 3 respondents. Thus, people who care about the future and are aware of consequences, use financial restriction (limitation) strategies more than people who do not care much about the future and the consequences.

Financial exceeding. The effect on financial exceeding is significant (F (3, 650) = 7.09, p = .000). Type 1 and Type 3 respondents, who have the highest scores, differ significantly from Type 2 respondents, who have the lowest scores. Mean scores for Types 1 and 3 do not differ significantly from each other. Thus, people who are little aware of the consequences of their decisions (regardless of whether they care about the future), exceed financial limits more than people (Type 2) who care about the future and are aware of consequences

Tax morale. There is a significant main effect of orientation type on tax morale (F (3, 650) = 8.39, p = .000). Tax morale is the lowest for Type 3 respondents and significantly lower than for Type 4 respondents. Both types are highly careless about the future. Given this, respondents who have a high awareness of the consequences of their decisions, have lower tax morale than people who have a low awareness of the consequences.

PREDICTING AND EXPLAINING HEALTHY FINANCIAL BEHAVIOR

In the following analyses, multiple regression analyses are reported in which variables/factors are identified that explain and predict indicators of responsible and healthy financial behavior. These indicators of responsible and healthy financial behavior are: concern or worry about finances, restriction of budget limits, exceeding budget limits, and tax compliance.

Predicting concern or worry about business finances

In the next analyses, a hierarchical regression analysis has been performed to test which variables are predicting concern or worry about business finances (Table 4). Five 'blocks' of variables are entered into the analysis. In *Model 1,* two knowledge variables are entered: self-reported financial knowledge and self-reported tax knowledge. The lower the values, the lower the self-assessed knowledge (*min=1, max=5*). In *Model 2*, the orientation variables (awareness of consequences and carelessness about the future) are entered. *Model 3* includes variables related to financial constraints (or lack of financial constraints) to the model: financially restricting and exceeding budget limits. *Model 4* includes measures for pension saving or work disability. In *Model 5*, the complete model, the mental budgeting variables are also entered.

In *Model 1*, both knowledge variables are negative predictors of financial concern or worry. The lower one's financial and tax knowledge, the more people worry about their business finances. However, these two variables explain only 5.1 percent of the variance. In *Model 2*, in addition to the two significant predictors of Model 1, carelessness about the future positively predicts financial concern or worry. Thus, as people care less about the future, they tend to be more concerned and worry more about their business finances. The model explains slightly more variance than the first model, namely 5.6 percent. In *Model 3*, the effect of financial knowledge disappears in favor of exceeding and overdraft, both positive predictors. As people's financial behavior is more characterized by exceeding financial limits or by more overdraft of their bank account, they are more concerned and worry more about meeting their financial business obligations. Tax knowledge remains a negative predictor of financial worry. The explained variance of this model rises to 21.5 percent. The results in *Model 4*, replicate the findings from Model 3, extended with measures taken for pension as a negative predictor. That is, people who have not taken financial measures for their retirement (pension), worry more about their business finances than people who have arranged something for their pension. Model 4 explains 22.2 percent variance in financial concern and worry. The last model, *Model 5*, demonstrates that the mental budgeting variables are significant predictors. As people tend to make fewer reservations, they worry more. Further, the more their financial behavior is characterized by compensating excessive spending, or the more they treat money as fungible (i.e., exchangeable), the more they worry about their business finances. Model 5 explains 31.4 percent of the variance.

Predictor variable	Model 1	Model 2	Model 3	Model 4	Model 5
Knowledge					
Financial knowledge	**–0.14****	**–0.14****	**–0.10**	**–0.08**	**–0.06**
Tax knowledge	**–0.12****	**–0.12****	**–0.11***	**–0.11***	**–0.13****
Time orientation					
Aware of consequences		**0.03**	**0.06**	**0.06**	**0.12****
Careless about future		**0.10****	**0.05**	**0.05**	**0.04**
Financial constraints					
Exceeding			**0.27****	**0.26****	**0.13****
Restricting			**0.05**	**0.04**	**0.07**
Overdraft (being in the red)			**0.27****	**0.28****	**0.19****
Measures taken					
For pension (0=no, 1=yes)				**–0.11****	**–0.09***
For work disability (0=no, 1=yes)				**0.04**	**0.04**
Mental budgeting					
Making reservations					**–0.15****
Compensating					**0.10***
Fungibility					**0.28****
Nagelkerke R^2	**0.051**	**0.056**	**0.215**	**0.222**	**0.314**

*** p < .05;**
**** p < .01**

Table 4. Hierarchical OLS regression analyses predicting concern or worry about business finances (beta values).

The results from this hierarchical regression analysis show that financial and tax knowledge and how people think about the future explain only a fraction (5.6%) of how much they are concerned and worry about their business finances. When variables related to how people treat financial constraints are added to the model, the explained variance increases to more than 20%. Measures taken for one's future financial situation slightly increases this to 22%. Mental budgeting skills increase the explained variance with 9% to more than 31%. Financial restrictions (constraints) and mental budgeting skills explain a lot of variance in how much people are financially concerned and worry about their business finances. To summarize the final model, Model 5: people worry more about their business finances, if tax knowledge is lower, if awareness of consequences is higher, if exceeding behavior is more prevalent, if they are in the red, if measures for pension are absent, if making reservations is less prevalent, if compensating behavior is more present, and if money is treated as more fungible.

Predicting financially restricting and exceeding budget limits

Financially exceeding budget limits is significantly related to concern and worrying about business finances (Table 4). In two next analyses, it is tested how the mental budgeting variables financial restriction and financial exceeding are related to other relevant financial behavior variables in this study. In the first analysis, the regression analysis has financial restriction as a dependent variable. In the second analysis, the regression analysis has financial exceeding as a dependent variable. In both multiple regressions, financial behavior variables are the independent variables. In Table 5, the beta values of the regression analyses are shown.

	Financial restriction	Financial exceeding
Financial knowledge	**.098**	**–.124***
Tax knowledge	**.032**	**.026**
Aware of consequences	**.107***	**–.026**
Careless about future	**–.047**	**.071**
Financial exceeding	**.022**	**—**
Financial restriction	**—**	**.020**
Overdraft (being in the red)	**.069**	**.078***
Making reservations	**.246****	**–.122***
Compensating	**.199****	**–.051**
Fungibility	**.018**	**.336****
Adjusted R^2	**.193**	**.240**

***p < .05; **p < .01**

Table 5. OLS regression results. Determinants of financial restriction and financial exceeding of budgets (beta values)

In Table 5, 'awareness of consequences', 'making reservations' and 'compensating' are significant predictors of financial restrictions. If people are more aware of consequences, make more reservations, and compensate more for earlier expenses, their financial behavior is more characterized by financial restrictions. Financial exceeding is significantly predicted by financial knowledge, overdraft (being in the red), making reservations, and fungibility. People with a low level of financial knowledge exceed their budget limits more often than people with a high level of financial knowledge. Also, people who are 'in the red' on their bank account are more likely to exceed their budgets than people who are not. Further,

people who make less reservations, tend to exceed their budgets more often than those who make more reservations. Lastly, people who consider money as more fungible, are more likely to exceed their budgets than people who do less. Note that 'making reservations' is the only variable that predicts both behaviors. Increasing financial knowledge will only affect exceeding behavior, not financially restrictive behavior.

The model of financial restriction has an adjusted R^2 of .193 and the model of financial exceeding has an adjusted $R2$ of .240. Note that because of the low $R2$s, we must be careful with the interpretation and conclusions of the results of Table 5.

Predicting reported tax compliance

As a proxy for tax compliance we take people's response (*yes, no, don't know*) whether (1) the tax administration had taken measures for late payment during the last three years, (2) the tax administration had taken measures for late filing during the last three years, and (3) whether an agreement on a payment scheme (because of late payment for taxes due) had been made in the past. For each analysis, respondents are excluded who answered 'don't know'. Three separate hierarchical regression analyses were performed.

'Blocks' of variables are entered in consecutive steps to predict the three outcome variables (Table 6). *Model 1* starts with the financial and fiscal knowledge variables as predictors. In *Model 2*, tax attitude has been added to the model. In *Model 3*, two tax compliance variables are added: whether the respondent and the tax authority have agreed on a payment schema for taxes due (yes *versus* no), and whether the tax authority had taken measures because of too late tax filing (yes *versus* no). *Model 4* includes variables regarding finances (exceeding and restricting on budgets, overdraw of bank account, and concern or worry about business finances), and *Model 5* is the complete model and includes the three mental budgeting variables.

Tables 6, 7, and 8 show the odds ratios (OR) of each predictor in relation to three outcome variables: measures taken by tax authority due to late payment, measures taken by tax authority due to late tax filing, and agreement with tax authority on a payment scheme. An OR value equal to 1 implies that the independent variable has no effect on the outcome variable. An OR value larger than 1 implies that an increase in the independent variable increases the likelihood that the event has taken place (here: that a measure has been taken). An OR value smaller than 1 implies that an increase in the independent variable decreases the likelihood that the event has taken place.

Measures taken due to late payment

In *Model 1* in Table 6, neither of the knowledge variables are significant predictors. Only 0.9 percent of the variance is explained by this model. Tax attitude is a significant predictor in *Model 2*: as tax morale increases, it is less likely that people have experienced measures taken due to late tax payment. Model 2 explains 2.9 percent of the variance. *Model 3* shows that the contribution of compliance disappears in favor of the two tax compliance variables. Having had measures taken such as a payment scheme to pay one's tax liability, and late tax filing are significant predictors of whether measures had been taken due to late payment. Explained variance increases from 2.9 to 31 percent. This implies that tax compliance adds a lot to explain late payment measures. In fact, related fiscal behavior variables explain the other fiscal behavior variable. The fiscal behavior variables are thus correlated. *Model 4* yields the same results as Model 3, including the restriction variable as significant predictor. Restricting one's expenses decreases the likelihood that a late payment measure has been taken by the tax authority. More than 36 percent of the variance is explained by this model. *Model 5* yields the same significant predictors as Model 4 with a slight increase in explained variance.

Predictor variable	Model 1	Model 2	Model 3	Model 4	Model 5
Knowledge					
Financial knowledge	.967	1.009	1.003	1.145	1.162
Tax knowledge	.826	.843	.929	1.008	.994
Tax attitude					
Tax morale		.706*	.871	.949	.970
Tax compliance					
Payment scheme (0=no, 1=yes)			5.224**	3.775**	.683**
Late tax filing (0=no, 1=yes)			0.959**	10.714**	.787**
Finances					
Exceeding				1.278	1.284
Restricting				.596**	.601**
Overdraft (being in the red)				1.519	1.401
Concern or worry about finances				1.257	1.221
Mental budgeting					
Making reservations					.776
Compensating					1.190
Fungibility					.926
Nagelkerke R^2	.009	.029	.310	.363	.367

* $p < .05$; ** $p < .01$

Table 6. Hierarchical logistic regression analyses predicting measures taken by tax authority due to late payment (0=no measure taken, 1=measure taken). Values in this table are the exponentiation of the b-coefficients, or odds-ratios (exp(b) values).

The mental budgeting variables are not significant for late payment measures. Thus, the only financial behavioral component that is predictive of a late payment measure, is the extent to which people take financial restrictions into account when making a financial decision. There is a small increase in explained variance to 36.7 percent. Fiscal history seems

to be predictive of (other) fiscal measures. Mental budgeting components do not play a role.

Measure taken due to late tax filing

In Table 7, the tax variable "measure taken by tax authority due to late filing" is explained by five models, similar to Table 6. The independent variable "late tax filing" has been replaced by "late payment." The two tax compliance variables are significant predictors of late filing. Fungibility (Model 5) has a strong positive effect on late filing. People who perceive money as flexible and do not apply mental budgeting, are more likely to file their tax declaration too late. The explained variance of Model 5 is 40.2 percent.

Predictor variable	Model 1	Model 2	Model 3	Model 4	Model 5
Knowledge					
Financial knowledge	.958	1.006	.981	.927	.862
Tax knowledge	.771	.787	.878	.885	.891
Tax attitude					
Tax morale		.671*	.818	.842	.779
Tax compliance					
Payment scheme (0=no, 1=yes)			4.127**	3.492**	3.128**
Late tax payment (0=no, 1=yes)			0.964**	1.302**	11.795**
Finances					
Exceeding				.982	.891
Restricting				1.445	1.407
Overdraft (being in the red)				1.130	1.076
Concern or worry about finances				1.360	1.187
Mental budgeting					
Making reservations					1.333
Compensating					1.321
Fungibility					2.206**
Nagelkerke R^2	.015	.037	.348	.368	.402

* p < .05; ** p < .01

Table 7. Hierarchical logistic regression analyses predicting measure taken by tax authority due to late tax filing (0=no measure taken, 1=measure taken). Values in table are the exponentiation of the b-coefficients, or odds-ratios (exp(b) values).

Payment scheme

In Table 8, the dependent variable to be explained is the payment scheme agreed with the tax authority. A payment schema will be agreed on, if the self-employed entrepreneur is unable to pay the full tax payment at the due time. Tax attitude is negatively related to payment scheme. People with low tax morale are more likely to have a payment scheme with the tax authority than people with a high tax morale. Again, the tax compliance variables are significant predictors of the payment scheme. Fungibility (Model 5) has a strong positive effect on payment scheme. Self-employed who perceive money as flexible and do not apply mental budgeting are more likely to have tax payment problems and have agreed a payment scheme with the tax authority. The explained variance of Model 5 is 34.4 percent.

Predictor variable	Model 1	Model 2	Model 3	Model 4	Model 5
Knowledge					
Financial knowledge	.948	1.010	.964	1.014	1.017
Tax knowledge	.790	.812	.918	1.004	.995
Tax attitude					
Tax morale		.595**	.645**	.683*	.690
Tax compliance					
Late tax filing (0=no, 1=yes)			.129**	.615**	.215**
Late tax payment (0=no, 1=yes)			.332**	.039**	.895**
Finances					
Exceeding				1.122	.982
Restricting				.953	1.025
Overdraft (being in the red)				1.945*	1.735
Concern or worry about finances				.533**	1.375
Mental budgeting					
Making reservations					.829
Compensating					1.120
Fungibility					1.556
Nagelkerke R^2	.013	.053	.270	.328	.344

* p < .05; ** p < .01

Table 8. Hierarchical logistic regression analyses predicting payment scheme with the tax authority (0=no payment scheme, 1=payment scheme). Values in table are the exponentiation of the b-coefficients, or odds-ratios (exp (b) values).

The multiple regression analyses of Tables 6, 7, and 8 show that tax compliance, as operationalized by measures taken by the tax authority due to late payment, is mainly predicted by whether or not other fiscal measures have been taken in the past. To a large extent, tax non-compliance is thus a kind of recidivism. Financially restricting has a negative effect (OR value < 1) on late tax payment: for people who use less (more) restrictions on their budgets, it is more (less) likely that measures have been taken by the tax authority due to late tax payment. Fungibility increases the likelihood of late tax filing.

In this paper, determinants of financial behavior are studied with a special focus on the contribution of mental budgeting. All three aspects of mental budgeting (making reservations, compensating, fungibility) were significantly predictive of financial worry about business finances (Table 4). Mental budgeting aspects contributed differentially across financial restriction and financial exceeding. Financial restriction was predicted by making reservations and compensating, while financial exceeding was predicted by making reservations and fungibility (Table 5). No effects of mental budgeting have been found on tax compliance (late payment, late filing, payment scheme) (Tables 6–8). Fungibility, i.e. treating money as exchangeable, was the only significant predictor, and only predictive of late tax filing measures. Thus, self-employed who consider money to be fungible (i.e., not earmarked for specific purposes) are more likely to have had measures taken by the tax authority because of late filing. The finding that mental budgeting is hardly related to tax compliance suggests that paying taxes is obviously not a planned activity of self-employed entrepreneurs, but rather an external obligation, resulting in less mental budgeting strategies.

CONCLUSIONS AND IMPLICATIONS

Self-employed entrepreneurs without personnel do financial management both for their company and their household. Usually, they have no stable business income and often they are concerned and worry about their business finances, probably more than employees with a fixed salary.

Four types of self-employed have been formed, based on their time orientation. These four orientation types are characterized by their awareness of consequences and carelessness about the future. Type 2 people (24 percent; focus on long-term consequences) deviate in a favorable direction from the average. They make reservations, restrict their expenses and adhere to budgets (low on exceeding). They treat money as less fungible. Type 2 people are characterized by responsible and healthy financial behavior. On the other hand, Type 3 people (36 percent; focus on the present and less focus on consequences), deviate from the average in an unfavorable direction. They make fewer reservations, compensate less, restrict their expenses less, and do not adhere to their budgets (high on exceeding). They have the lowest tax compliance. Type 3 people are characterized by less responsible and less healthy financial behavior.

Self-employed entrepreneurs with less healthy financial behavior are more concerned and worry more about their business finances. It is shown that financially restricting and exceeding have different patterns with regard to financial behavior. Financial restriction is related to awareness of consequences, making reservations, and compensating. Financial exceeding is related to lower financial knowledge, making less reservations, and fungibility. Again, a responsible and healthy pattern *versus* an irresponsible and unhealthy pattern of financial behavior.

Tax compliance is mainly a function of earlier and related behavior, although financial restriction and fungibility play a role. Putting more financial restrictions on expenses makes late payment less likely, whereas treating money as more fungible makes late filing more likely.

In this study, the relationships between variables are correlational, even in the multiple regressions, and thus no conclusions can be drawn about causes and effects. For example, concern and worrying about finances may be the cause of financial behaviors (after worrying you start to improve your finances) or may be the effect of financial behaviors (due to financial behaviors you start worrying). And even more complicated, there may be an interaction between financial behaviors and concern or worry.

Responsible and healthy financial behavior is not only a function of the characteristics of the self-employed entrepreneur, but also of the market, fiscal rulings, and other situational factors. Thus, less responsible behavior cannot be attributed only to the self-employed entrepreneur. Circumstances should be taken into account before qualifying and evaluating financial behavior as healthy or unhealthy, responsible or irresponsible.

The implications of this study are relevant both for the self-employed entrepreneur, for the fiscal authorities, and for governmental policy towards more healthy, responsible and sustainable financial behavior. Self-employed entrepreneurs may improve their financial behavior by applying mental budgeting and other control measures. They may do so by (actively) learning how to make sensible reservations for future expenses, or how to treat money as less fungible (i.e., learning when is it better to earmark money and when it is not). Related to this, authorities, governmental institutes and policy makers may participate in special financial education plans. They may arrange meetings and advise self-employed entrepreneurs how to improve their financial administration and behavior in order to set and to adhere to budgets, and teach them measures how to avoid overspending. In addition to focusing on tax compliance only (timely filing, timely paying, correct reporting), the tax administration may also focus on the role of financial behavior in tax compliance and study whether financial behavior and tax compliance are related (at least the timely paying aspect), and whether (healthy) financial behavior is a prerequisite for (healthy) tax behavior.

REFERENCES

Antonides, G., De Groot, I.M., & Van Raaij, W.F. (2011). Mental budgeting and the management of household finance. Journal of Economic Psychology, 32(4), 546–555.

Friedman, M. (1957). A Theory of the Consumption Function. Princeton, NJ: Princeton University Press.

Gathergood, J. (2012a). Debt and depression: Causal links and social norm effects. Economic Journal, 122, 1094–1114.

Gathergood, J. (2012b). Self-control, financial literacy and consumer over-indebtedness. Journal of Economic Psychology, 33, 590–602.

Heath, C. (1995). Escalation and de-escalation of commitment in response to sunk costs: The role of budgeting in mental accounting. Organizational Behavior and Human Decision Processes, 62(1), 38–54.

Heath, C., & Soll, J.B. (1996). Mental budgeting and consumer decisions. Journal of Consumer Research, 23(1), 40–52.

Kirchler, E., Rodler, C., Hölzl, E., & Meier, K. (2001). Conflict and Decision-Making in Close Relationships. Love, Money and Daily Routines. Hove, East Sussex, UK: Psychology Press.

Statistics Netherlands (2016). Data retrieved on April 4, 2016 from http://statline.cbs.nl/Statweb/.

Van Raaij, W. F. (2016). Understanding Consumer Financial Behavior. Money Management in an Age of Financial Illiteracy. New York: Palgrave Macmillan.

Zhou, R., & Pham, M.T. (2004). Promotion and prevention across mental accounts: When financial products dictate consumers' investment goals. Journal of Consumer Research, 31, 125–135.