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# Encouraging recalibration of student loans in the Netherlands: The impact of information about future costs and the ease of adjustment☆

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ABSTRACT

Rising student debt, overborrowing among Dutch students, and the complexity of students' loan decisions signal the need for interventions that evoke more thoughtful loan decisions among Dutch students. In a large field experiment ($N = 48{,}700$) we addressed this need by testing interventions that encourage them to recalibrate their monthly loan amount. We compared a control condition to four interventions, in which we provided students with different kinds of personalised information about the future costs of their student loan and about how easily the height can be adjusted. Although all interventions increased recalibration, the intervention that provided students with the most elaborate personalised information about the future costs of their student loan yielded the most stable effects. These students were more likely to decrease their monthly loan amount ($OR = 1.28$ [95% CI: 1.08, 1.52]), and when they did, they decreased it to a larger extent ($B = -4.28$ [95% CI: −7.99, −0.57]) than students in the control condition. Limitations and policy implications will be discussed.



## 1. Introduction

In many countries, attending higher education leaves students with a fair share of student debt. And in recent years, these student debts seem to be increasing substantially. In the USA college graduates of 2019 borrowed $30,062 on average, $6300 more than in 2009 (Kerr, 2020). In England, the average student loan debt on entry to repayment was £40.280 in 2020, in comparison to £21,160 in 2015 (Statista, 2021). In the Netherlands, total student debt increased by more than €6 billion between 2015 and 2019 (CBS, 2019). Whereas this increase is likely attributable to multiple causes, such as increased living and tuition costs, an important question is whether it may also reflect a tendency of overborrowing. Student loans can be seen as an investment, but also have a long-lasting effect on people's financial situation, pointing to the importance of balancing current and future financial needs. Interventions that help students make more thoughtful loan decisions might thus reduce overborrowing and any downstream consequences on people's future financial situation. In the current study, we examined the effectiveness of such interventions, within the Dutch student finance system.

In the Netherlands, an important cause of the recent increase in student debt is a policy change implemented in September 2015 by the Ministry of Education, Culture and Science. Until this change, a large part of the student finance system involved grants converted into gifts when a student graduated within 10 years. After September 2015, the system switched to a more loan-oriented finance system for higher education, resulting in more students needing to borrow and an increase in average loan amounts (CBS, 2019). This switch could substantially impact the lives of those students involved and calls for thoughtful guidance of student borrowing behaviour. As with other types of credit, taking out a loan is not without consequences. An important risk is that a negative change to one's future financial situation makes repaying a loan more difficult or even impossible (Finance Watch, 2019; Van der Werf and Warnaar, 2018). Because the Dutch government did not want the heavier reliance on student loans in the new system to pose an obstacle for entering higher education, several measures were taken to decrease the impact of a student loan on students' future disposable income. Student

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loan terms were made relatively lenient, thereby decreasing the risk of borrowing for students. For example, the maximum repayment period of a student loan was lengthened from 15 to 35 years, the minimal monthly repayment amount was made dependent (as before) on one's households' income, and – for the years 2017, 2018, and 2019[1] – the interest rate on a student loan was set at 0% (DUO, 2019). Moreover, if a loan cannot be paid back within the maximum repayment period, the outstanding debt will be forgiven. Although well-intended, these measures might have contributed (at least partly) to the increase in Dutch student debt over the past several years.

While more lenient loan terms might have removed possible obstacles for students to enter higher education, these measures might also have had some unintended and undesirable consequences. Most importantly, more lenient loan terms may lead students to take out higher loans than needed and thereby acquire greater debts than (strictly) necessary. Results of a representative survey among Dutch higher education students indicated that excessive borrowing might indeed be a realistic concern. Of the students with a student loan, 54% used part of their loan to save, 36% indicated they could still manage financially if they would borrow less, and 31% decided on their monthly loan amount by simply borrowing the maximum amount (Van der Werf et al., 2017). These findings suggest that students' decisions on the size of their loans are not only based on how much (extra) money they actually need for studying in higher education. Despite the aforementioned 'safety' measures in the new student finance system, refraining from excessive (more-than-needed) borrowing is still well-advised, as students' outstanding debt could impact their disposable income for up to 35 years. To illustrate, assuming an interest rate of 0% for the whole loan duration and a maximal repayment period of 35 years, a 23-year-old student who graduates with an accumulated debt of €50,000 has to repay €120 each month until (s)he is 60 years old.[2] Given these long-term consequences of a student loan it is thus important that – like for any type of credit – students have a proper understanding of how their current borrowing decisions in the student finance system influence their disposable income in the future (OECD, 2016).

Due to multiple uncertainties, however, having a clear understanding of the influence of a loan on one's future disposable income might be more complicated for a student loan than for regular consumer credit. When taking out a consumer loan, the loan amount is often geared towards a specific need, such as a car or home improvement. In these cases, most consumers already decided on the exact loan amount before taking out a loan (Van der Werf and Warnaar, 2018). But when it concerns a Dutch student loan, deciding on the amount of the loan is not as straightforward. Dutch students do not request, for instance, a total loan amount, instead they ask for a monthly loan amount. Often, students decide on this at the beginning of their studies, before they know how much they actually need to make ends meet, which makes it complicated to determine the exact amount to borrow monthly a priori. Students often also do not know in advance how long they will be studying and thus for how many years their student debt will accumulate. Moreover, at the time students make a loan decision they do not know exactly what their future career will look like and, more specifically, what their future (disposable) income will be. This makes it difficult, or even impossible, for students to determine whether they will be able to adhere to the required minimal future repayments of their loan. Finally, during the build-up and the repayment of a student debt, the interest rate on student loans can change at least every five years, thereby altering the impact of an outstanding debt on students' disposable income well after graduation.[3] To summarise, understanding how one's current student loan decision influences one's future financial situation, requires a complex calculation involving many unknown variables.

The introduction of the new student loan system, the indication that Dutch students are overborrowing (Van der Werf et al., 2017), and the complexity of students' loan decisions, signal the need for interventions that evoke more thoughtful loan decisions among students in the Netherlands. In the current study, we address this need by testing interventions that encourage Dutch students to recalibrate their monthly loan amount by providing them with information about specific aspects of their loan, namely the future costs and the ease of adjustment. Currently, when Dutch students are taking out a loan, they select and are accordingly informed about their monthly loan amount. They are not informed, however, about the effect of the monthly loan amount on the debt they accumulate or their future monthly repayment. Thus, students learn about the current benefits of their loan (i.e., the money they receive each month), but not about its future costs (i.e., the future monthly repayment). Because decisions are greatly influenced by the information that people focus their attention on (Dolan et al., 2012; Kahneman and Thaler, 2006), a strong focus on the current benefits of a loan is likely to result in more lenient borrowing decisions. It could tempt students to take out higher loans than strictly necessary, to allow perhaps for a more comfortable current financial situation. Making future costs more salient by increasing students' focus on the future monthly repayment, on the other hand, might reduce the short-term temptation of borrowing excessively.

An additional element of the Dutch student loan application process that might influence students' borrowing decisions, involves that, by default, students' monthly loan amount stays unchanged until the loan is terminated. It is possible, however, to adjust the loan amount each month. If students choose to make an adjustment, this new monthly loan amount will automatically last until termination again, or until a new adjustment is made. It has been widely documented that people tend to passively stick with default options rather than to make active changes (Johnson and Goldstein, 2003; Kahneman et al., 1991; Samuelson and Zeckhauser, 1988; Timmons et al., 2019). This status quo bias might lead students to maintain their initial monthly loan amount, even if this no longer matches their current situation, something that is highly likely during the four years that a typical study in Dutch higher education typically lasts. The status quo bias together with the set defaults of the Dutch student finance system, might thus lead students to stick with their initial monthly loan amount without thoughtfully considering whether this is the best alternative, thereby increasing the likelihood of making suboptimal borrowing decisions.

Addressing the elements of the Dutch student loan application process that bias students' decision-making is, in our view, of

[1] The interest rate of the student loan is tied to the interest rate of a 5-year government bond (Eerste Kamer der Staten Generaal, 2019). Before the start of the new academic year, interest rates are announced. Before a student starts repaying their loan, interest rates of the loan could change yearly. After the repayment of the debt starts, the interest rate will be fixed for a 5-year period (DUO, 2019). Hence, if students repay their debt within 35 years, the interest rate on their loan could change seven times.

[2] After graduation, students do not have to start repaying their debt immediately. The government allows for a 'start-up phase' of two years during which students are not yet obligated to repay their debt. Due to this start-up phase, a student who graduated at 23 years will only start repaying their debt at 25.

[3] The interest rate of the student loan is tied to the interest rate of a 5-year government bond (Eerste Kamer der Staten Generaal, 2019). Before the start of the new academic year, interest rates are announced. Before a student starts repaying their loan, interest rates of the loan change yearly. After the repayment of the debt starts, the interest rate will be fixed for a 5-year period (DUO, 2019). Hence, if students repay their debt within 35 years, the interest rate on their loan could change seven times.

utmost importance to help students make borrowing decisions that are well-suited to their financial situation. Specifically, we expect that informing students about the future costs of their monthly student loan amount in combination with emphasising the ease with which this amount can be adjusted, makes it more likely that students thoughtfully recalibrate their loan, or in other words that they reconsider their current monthly loan amount on basis of the newly acquired information. Research among college students in the USA provides initial support for this reasoning. Darolia (2016) examined whether providing students with personalised information about their future monthly repayment, their cumulative debt, and the borrowing behaviour of their peers would lead them to make more adjustments to their loan. On average, the personalised information did not seem to change the amount that students borrowed. It did seem to affect particular subgroups, such as students with lower grades, lower incomes, and those with the highest loans. Those subgroups adjusted their loans more often than those who received the standard information. In another study (Barr et al., 2016), American college students received eight text messages (SMS) mentioning: that they had an active choice (thereby counteracting the status quo), that future costs would be influenced by the size of their current loan (thereby making future costs more salient), and that people were available who could help them with their loan application. Compared to a no-treatment control condition, the text message campaign decreased the number of students taking out more expensive unsubsidised loans. This effect – like the one of Darolia (2016) – was especially pronounced among more vulnerable subgroups, such as students with low financial literacy or high accumulated debts.

Whereas the aforementioned empirical studies that tested the effect of (personalised) information on borrowing decisions presented some promising results, they were both targeted at students from a specific University or Community College in the United States (Barr et al., 2016; Darolia, 2016). Because we collaborated with the Dutch Education Implementation Office, we were not restricted to one educational institution, but could select a nationwide sample of 50,000 Dutch higher education students. Furthermore, in our study, we provided students with a more complete overview of the future costs of their loan, by including not only their current accumulated debt, but also a prediction about their debt at graduation. This gives students a more realistic idea about the future costs, as their future borrowing behaviour is also taken into account. Hence, the current research extends previous research by using a broader nationwide sample and by providing students with more realistic personalised future consequences of their student loan.

### 1.1. Current research

In a large experimental field study, we examined whether providing students with personalised information about the future costs of their student loan and about how easily the amount can be adjusted, would facilitate students' recalibration of their monthly loan amount. More specifically, we investigated the adjustments students made to their loans, in the month immediately following our interventions (April 2019). That is, whether students made an adjustment, the direction of the adjustment (i.e., a decrease or increase of the monthly loan amount), and the magnitude of the adjustment (in euros). In addition, for students that made an adjustment in April, we investigated possible correction effects two months later (June 2019). That is, we checked whether students that recalibrated their loan in April, changed their monthly loan amount back to the original amount in the following months, as this might indicate that they regretted their adjustment.

The current research was conducted in close collaboration with *Dienst Uitvoering Onderwijs* (DUO; Education Implementation Office), the Dutch organisation that provides all student loans in the Netherlands. A randomly selected sample of 50,000 Dutch students with a loan were included in our study. These students were randomly assigned to one of five conditions: control vs total debt vs monthly repayment vs plain letter vs plain e-mail. The total debt condition and monthly repayment condition involved our most important experimental interventions. To increase the salience of the future costs of the monthly loan amount, students in both these conditions received a letter with personalised information about their current accumulated debt and their estimated accumulated debt upon graduation. This information was presented both in text and with a visualisation. To counteract the status quo bias, using a four-step explanation of the adjustment process, the information emphasised that it was possible to adjust the loan amount each month in a quick and easy way. We expected that providing students with personalised information on the future costs of their monthly student loan amount and explicit information on the ease of adjustment would increase recalibration of student loans. Furthermore, based on the findings of Darolia (2016) and Barr et al. (2016), we tested whether our inventions were more effective for students with higher debts.

The difference between the total debt condition and the monthly repayment condition was that in the monthly repayment condition, the letter sent to students also included information about the amount of their future monthly repayment and how old they would be when their loan would be fully paid off (based on the maximum repayment period). At present, the way in which the maximum repayment period of 35 years is (typically) communicated might be interpreted by students as a positive attribute of the loan. The long repayment period considerably decreases the influence of the loan on one's future disposable income. It could be the case that when students perceive this information through a positive lens, they fail to realise how long they are actually tied to their student loan. For students who start repaying their student loan when they are 25, it would mean that they have to continue to do so until they are 60 years old. To make students in the monthly repayment condition more aware of the duration of their repayments, they were therefore provided with their estimated age at which their student loan would be fully paid off.

At the time of designing our interventions (in the fall of 2018), DUO developed an interactive online tool that provides students with estimations of their accumulated debt at graduation and the amount of their future monthly repayment. Moreover, it enables students to gain insight into how adjustments to their current student loan amount would impact their estimated accumulated debt and future monthly repayment. In both the total debt condition and the monthly repayment condition, a link to this interactive tool was therefore included in the letter. Because of the development of this new tool, we decided to include two additional interventions in our research: a plain letter and a plain e-mail condition. The plain letter and plain e-mail mentioned the new tool (with a link added) and included the necessary four steps for students to adjust their loan, but did not contain any personalised information on students' current or estimated accumulated debt. These additional two conditions allowed us to test whether the inclusion of personalised information is necessary to activate students to recalibrate their student loans, or whether only directing them to the interactive tool is sufficient to activate loan recalibration.

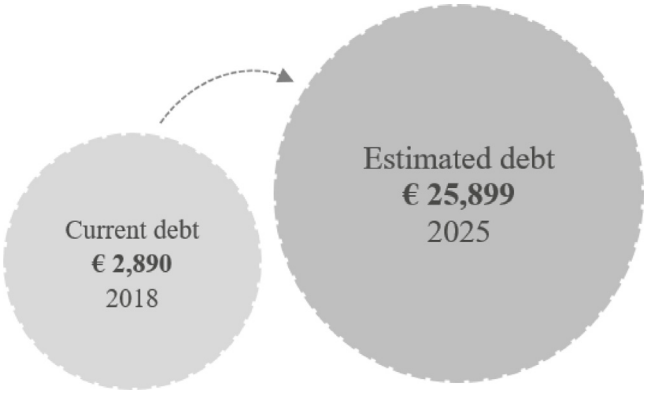


**Fig. 1.1.** Visualisation of the current accumulated debt and the estimated accumulated debt upon graduation, that was included in the letter of the total debt and monthly repayment condition.

## 2. Method

### 2.1. Participants and design

Our research was approved by the Psychology Research Ethics Committee of Leiden University. Our initial research sample consisted of 50,000 randomly selected Dutch students with a student loan. All selected students had started higher education after September 2015, and thus fell under the new, more loan-oriented student finance system. Selected students were randomly assigned to one of five conditions: total debt vs monthly repayment vs plain letter vs plain e-mail vs control. Selected students with incorrect or unknown address information, unknown age, or a monthly loan amount less than €5 at the start of the study, were excluded from our final research sample. After implementing these exclusion criteria, our research sample consisted of 48,700 Dutch students (25,695 females, 23,005 males; $M_{age} = 20.80$ years, $SD_{age} = 1.94$; $n_{control} = 9682$, $n_{total\ debt\ letter} = 9777$, $n_{repayment\ letter} = 9729$, $n_{plain\ letter} = 9754$, $n_{plain\ e\text{-}mail} = 9758$).

### 2.2. Procedure

At the end of March 2019,[4] students in the experimental conditions received either a letter or an e-mail from DUO that prompted them to review their current monthly student loan amount. Students in the control condition did not receive any prompt by DUO during that period.

***Total debt condition.*** Students in the total debt condition were sent a one-page letter from DUO that informed them of their current debt situation. After addressing students with their surname, the letter started with a question: *You have a student loan. Do you know what this means for your future?* In the next paragraph, personalised information about the current loan amount, current accumulated debt, and an estimation of the accumulated debt after graduation was provided. Additionally, a visualisation depicted their current and estimated accumulated debt after graduation (see Fig. 1.1).

[4] The e-mails and letters were sent to the students at March 22, 2019. Due to the different channels, the date at which students receive the messages differed one day. More importantly, a few days after sending out the letters, we discovered there was a non-working link in the letter of the monthly repayment condition. Immediately, 10,000 new students were randomly selected for the monthly repayment condition. The letter was sent out one week later to the new students in this condition, at March 29, 2019. In the current study, we did not take into account the data from the 10,000 students who had received a non-working link.

In the following paragraph, students were notified about the new tool that DUO developed, including a link to the tool. They were told that, with this tool, they are able to examine how adjusting their loan would influence their estimated accumulated debt and expected monthly repayment after graduation.

The letter ended with a paragraph highlighting that their monthly student loan amount could easily and quickly be adjusted each month. A four-step explanation was added to inform students about the adjustment procedure, and an image of a clock was added to indicate that this would take only two minutes of their time.

***Monthly repayment condition.*** Students in the monthly repayment condition were sent a similar letter as students in the total debt condition. The only difference was in the provided information about the student loan. In addition to the estimated accumulated debt after graduation, students in this condition were also informed about their expected future monthly repayment and how old they would be when their loan would be paid off: *After graduation you will repay €[expected monthly repayment] a month until you are [expected age at graduation + 2 years during which students do not yet have to repay their debt (i.e., start-up phase) + 35 years reflecting the maximum repayment period] years old.*

***Plain letter condition.*** Students in the plain letter condition were sent a letter without any personalised loan information. The letter merely informed them about the new tool, and the four steps it takes to adjust a student loan. The beginning of the letter, the information concerning the tool, and the information about adjusting the monthly loan amount were exact copies of the text in the total debt and monthly repayment condition.

***Plain e-mail condition.*** Students in the plain e-mail condition were sent an e-mail with the exact same information as was given in the plain letter condition.

### 2.3. Dependent variables

***Immediate effects.*** To investigate the extent to which students recalibrated their monthly loan amount in April 2019, we examined three different dependent variables: (1) adjustment of the monthly loan amount (i.e., whether or not students adjusted their loan amount), (2) the direction of the adjustment (i.e., whether the adjustment was a decrease or increase of the monthly loan amount), and (3) the magnitude of the adjustment (i.e., how large the adjustment was in euros).

***Correction effect.*** To check for a possible correction effect in June 2019, we examined the direction of the adjustment in June 2019 in comparison to the direction of the adjustment that students made in April 2019. Hence, whether students made an additional adjustment into the same direction as in April, or in the opposite direction.

## 3. Results

Below, we first describe our data analysis approach. Next, we report descriptive statistics and the results of our regression analyses concerning the immediate and longer-term effects of our interventions on the recalibration of the monthly student loan amount.

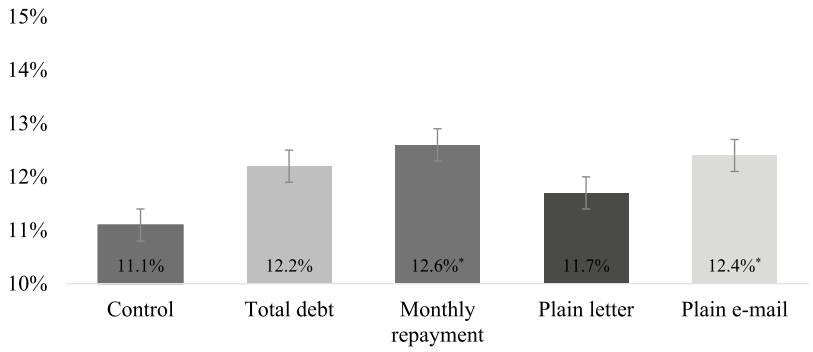


**Fig. 1.2.** Percentage of students per condition that adjusted their monthly loan amount in April 2019 (*$p < .05$; in comparison to the control group).

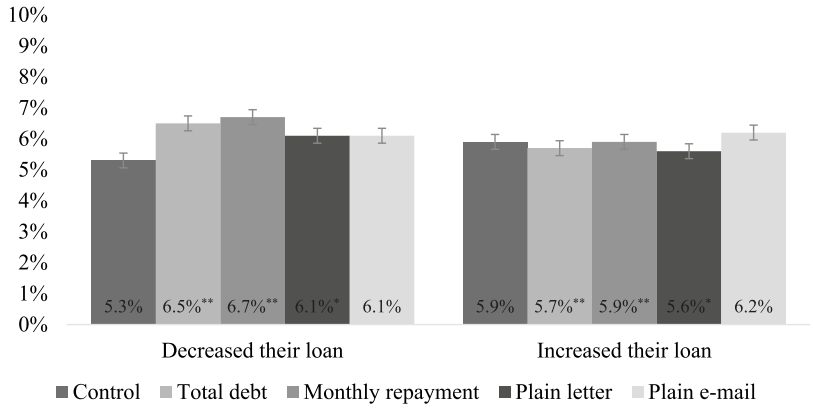


**Fig. 1.3.** Percentage of students per condition who decreased or increased their monthly loan amount in April 2019 (*$p < .05$; **$p < .01$; in comparison to the control group).

### 3.1. Data analysis

***Immediate and correction effects.*** We investigated our dependent variables in the month directly following our intervention (April 2019). To examine possible correction effects, we investigated the dependent variables in June only for students that recalibrated their monthly loan amount in April 2019.

***Regression analyses.*** Due to the different kinds of dependent variables for investigating the immediate effects (i.e., dichotomous, ordinal, and continuous), we used three different types of regression analyses to investigate our hypotheses. To investigate whether or not students adjusted their monthly loan amount, we used a logistic regression analysis. A multinomial logistic regression analysis was used to examine the direction of the adjustments (i.e., downward, no change, or upward),[5] and a linear regression analysis was used for examining the magnitude of the adjustment (in euros). The predictor and control variables were the same for all the analyses.

To examine the correction effect, we used a multinomial logistic regression analysis to investigate the direction of the adjustments in June in comparison April (i.e., same direction, no additional change, opposite direction).

***Predictor variables.*** Dummy variables of each condition were added to the analyses as predictor variables (with the control condition serving as reference category). To test whether the inventions were more effective for students with higher debts, we also added an interaction between the specific conditions and the initial monthly loan amount. Because this loan amount was not normally distributed, we transformed the variable into five categories, ranging from lowest through highest, and with each category containing approximately 20% of the students. In none of the analyses, however, we observed a significant interaction between the different conditions and the initial monthly loan amount (all $ps > .10$). To properly interpret our main effects, we therefore removed this interaction from all reported analyses.

***Control variables.*** In Table 8 in the Appendix, the distribution of demographic variables is shown per condition. As can be seen, gender and age differed significantly between conditions. The current accumulated debt (see Table 1) also differed significantly between conditions. To account for these differences, these variables were added to our analyses as control variables. To avoid large differences in variances between the variables included in the analyses, we rescaled the current accumulated debt (i.e., debt/1000) before including it.

Additionally, several variables were added to our analyses as control variables, describing: whether or not students adjusted their loan at least once in the year before our experiment (55%), the number of months they would still be eligible for the student loan ($M = 26.10$, $SD = 11.67$), and whether or not they received an additional questionnaire two weeks after the experiment (16%).[6]

### 3.2. Descriptive statistics

At the start of the study, the average accumulated student debt was €13,110. The average estimated accumulated student debt at graduation was €32,447, with a mean monthly repayment of

[5] We could not use an ordinal regression analysis due to the violation of the assumption of proportional odds ($ps < .001$).

[6] The questionnaire was used for a publication of Nibud (The Dutch National Institute for Family Finance Information; Van der Werf et al., 2019).

**Table 1**
Mean and standard deviation per condition of students' accumulated debt at the start of the study, the accumulated debt at graduation, monthly repayment, and age at which the debt has been paid off.

| | Debt at the start *M (SD)* | Debt at graduation *M (SD)* | Monthly repayment *M (SD)* | Age *M (SD)* |
|---|---|---|---|---|
| Control (n = 9682) | €13,402 (€10,958) | €32,729 (16,481) | €116.51 (58.66) | 60.10 (1.81) |
| Total debt (n = 9777) | €12,968 (€10,773) | €32,385 (16,376) | €114.93 (58.30) | 59.76 (1.75) |
| Monthly repayment (n = 9729) | €13,104 (€10,841) | €32,562 (16,486) | €115.91 (58.69) | 60.10 (1.78) |
| Plain letter (n = 9754) | €12,988 (€10,767) | €32,222 (16,383) | €114.71 (58.32) | 59.81 (1.78) |
| Plain e-mail (n = 9758) | €13,089 (€10,723) | €32,439 (16,422) | €115.48 (58.46) | 60.08 (1.77) |
| Total (n = 48,700) | €13,110 (€10,813) | €32,447 (16,430) | €115.51 (58.49) | 59.97 (1.78) |

€115.51 until students are on average 59.97 years old. Means and standard deviations of the accumulated debt at the start, the accumulated debt at graduation, the expected monthly repayment and the age at which students will finish repaying their loan are depicted, separately for each condition, in Table 1.

### 3.3. Immediate effects: Recalibration of the loan in April 2019

***Adjustment of the monthly loan amount.*** In the monthly repayment condition, students were more likely to adjust their monthly loan amount than students in the control condition, $B = 0.11$, $p = .014$, $OR = 1.12$ [95% CI: 1.02, 1.23]. Although the difference between the total debt condition and the control condition was in the same direction, this difference was not significant, $B = 0.07$, $p = .132$, $OR = 1.07$ [95% CI: 0.98, 1.18]. Regarding the plain letter and the plain e-mail condition, the effects of the intervention differed. Students in the plain letter condition were not more likely to adjust their monthly loan amount than students in the control condition, $B = 0.02$, $p = .650$, $OR = 1.02$ [95% CI: 0.93, 1.12]. In the plain e-mail condition students were significantly more likely to adjust their monthly loan amount than students in the control condition, $B = 0.09$, $p = .044$, $OR = 1.10$ [95% CI: 1.00, 1.20]. Fig. 1.2 depicts the percentage of students per condition who adjusted their monthly loan amount in April 2019.

Additional exploratory regression analyses to compare the experimental conditions revealed that students were significantly more likely to adjust their monthly loan amount in the monthly repayment condition than in the plain letter condition, $B = -0.09$, $p = .041$, $OR = 0.91$ [95% CI: 0.84, 1.00]. Between the other experimental conditions, no significant differences were found.

**Control variables.** The initial accumulated debt, the number of months students were still eligible for the student loan, whether students had adjusted their loan in the year before the experiment, their initial loan amount, and whether students received the additional questionnaire were all significantly related to whether or not students were likely to adjust their monthly loan amount in April 2019 across conditions (see Table 2).[7]

***Direction of the adjustment.*** Students in the total debt condition ($B = 0.25$, $p = .004$, $OR = 1.28$ [95% CI: 1.08, 1.52]) and students in the monthly repayment condition ($B = 0.25$, $p = .005$, $OR = 1.28$ [95% CI: 1.08, 1.52]) were more likely to decrease and less likely to increase their monthly loan amount than students in the control condition. Additionally, compared to the control condition, students in the plain letter condition were also significantly more likely to decrease and less likely to increase their monthly loan amount, $B = 0.19$, $p = .028$, $OR = 1.21$ [95% CI: 1.02, 1.44]. For students in the plain e-mail condition, the direction of the adjustment did not differ from students in the control condition. Between the experimental conditions, no significant differences were found. Fig. 1.3 depicts per condition, the percentage of students who decreased or increased their monthly loan amount in April 2019.[8]

**Control variables.** The initial accumulated debt, the number of months students were still eligible for the student loan, whether students had adjusted their loan in the year before the experiment, and their initial loan amount were all significantly related to the direction in which students adjusted their monthly loan amount in April 2019 across conditions (see Table 3).[9]

***Magnitude of the adjustment.*** To examine the extent to which students adjusted their monthly loan amount, we created a difference score ($\Delta_{\text{April}}$) by subtracting the monthly loan amount before the intervention (March 2019) from the monthly loan amount in April 2019 ($\Delta_{\text{April}}$ = loan amount April − loan amount March). Hence, students who decreased their monthly loan amount obtained a negative difference score, whereas students who increased their monthly loan amount obtained a positive difference score. Students who did not adjust their monthly loan amount obtained a difference score of 0.

Students in the total debt condition ($B = -5.27$, $p = .005$, $\beta = -.02$ [95% CI: −8.98, −1.56]) and the monthly repayment condition ($B = -4.28$, $p = .024$, $\beta = -.01$ [95% CI: −7.99, −0.57]) decreased their monthly loan amount more than students in the control condition. Students in the plain e-mail condition did not differ in the magnitude of their adjustments from students in the control condition. Students in the plain letter condition, however, did decrease their monthly loan amount more than students in the control condition, $B = -5.23$ $p = .006$, $\beta = -.02$ [95% CI: −8.94, −1.52]. No other significant differences were found between the experimental conditions. Table 5 depicts per condition the average amount with which students adjusted their monthly loan amount.[10]

[7] Excluding the control variables from the analysis did not affect the pattern of our findings. The results for the monthly repayment and plain letter condition remained significant. Additionally, without control variables, the results for the total debt condition were significant, $B = 0.11$, $p = .018$, $OR = 1.11$ [95% CI: 1.02, 1.21].

[8] We also ran a logistic regression analysis with only the students who changed their monthly loan amount ($n = 5846$). Hence, students who did not make a change to their monthly loan amount were not included in this analysis. The pattern of the results did not change. Students in the total debt condition ($B = -0.28$, $p = .003$, $OR = 0.75$ [95% CI: 0.63, 0.91]), the monthly repayment condition ($B = -0.27$, $p = .004$, $OR = 0.77$ [95% CI: 0.64, 0.92]), and in the plain letter condition ($B = -0.21$, $p = .030$, $OR = 0.81$ [95% CI: 0.68, 0.98]) were more likely to decrease their monthly loan amount than students in the control condition.

[9] Excluding the control variables from the analysis did not affect the pattern of our findings or whether they were statistically significant or not.

[10] We also ran a linear regression analysis merely with the students that changed their monthly loan amount ($n = 5846$). Hence, students that did not make a change to their monthly loan amount were not included in this analysis. The pattern of the results did not change. Students in the total debt condition ($B = -41.82$, $p = .002$, $\beta = -0.05$ [95% CI: −68.40, −15.24]), the monthly repayment condition ($B = -30.57$, $p = .023$, $\beta = -0.03$ [95% CI: −56.96, −4.18]), and in the plain letter condition ($B = -43.64$, $p = .001$, $\beta = -0.05$ [95% CI: −70.51, −16.76]) decreased their monthly loan amount more than students in the control condition. Students in the plain e-mail condition did not differ in the magnitude of their adjustments from students in the control condition, ($B = -26.30$, $p = .051$, $\beta = -0.03$ [95% CI: −52.74, 0.14]).

**Table 2**
Results (parameter estimates, standard errors, odds ratio's, p-values, and 95% confidence intervals) of the logistic regression of students' adjustments to their monthly loan amount in April 2019 (no/yes), analysis including control variables, and with the control condition as reference category.

| | *B* | *SE* | *OR* | *p* | 95% CI |
|---|---|---|---|---|---|
| Constant | −2.37 | .20 | 0.09 | <.001 | |
| Total debt condition (ref = control) | 0.07 | .05 | 1.07 | .13 | [0.98, 1.18] |
| Monthly repayment condition (ref = control) | 0.11 | .05 | 1.12 | .01 | [1.02, 1.23] |
| Plain letter condition (ref = control) | 0.02 | .05 | 1.02 | .65 | [0.93, 1.12] |
| Plain e-mail condition (ref = control) | 0.09 | .05 | 1.10 | .04 | [1.00, 1.20] |
| Gender (ref = male) | 0.04 | .03 | 1.05 | .13 | [0.99, 1.11] |
| Age | 0.00 | .01 | 1.00 | .69 | [0.99, 1.02] |
| Initial accumulated debt | −0.01 | .00 | 0.99 | .00 | [0.99, 1.00] |
| Number of eligible months left | −0.02 | .00 | 0.99 | <.001 | [0.98, 0.99] |
| Made adjustments before start (ref = no) | 1.49 | .04 | 4.42 | <.001 | [4.11, 4.76] |
| Initial loan amount | −0.11 | .01 | 0.90 | <.001 | [0.88, 0.92] |
| Questionnaire (ref = no) | .09 | .04 | 1.09 | .03 | [1.01, 1.17] |

**Table 3**
Results (parameter estimates, standard errors, odds ratio's, p-values, and 95% confidence intervals) of the multinomial logistic regression analysis including control variables, direction of the adjustments to the monthly loan amount in April 2019 (decreased/unchanged/increased, with increased as reference category) as dependent variable, and the control condition as reference category.

| | *B* | *SE* | *OR* | *p* | 95% CI |
|---|---|---|---|---|---|
| Decreased | | | | | |
| Total debt condition (ref = control) | 0.25 | .09 | 1.28 | .01 | [1.08, 1.52] |
| Monthly repayment condition (ref = control) | 0.25 | .09 | 1.28 | .00 | [1.08, 1.52] |
| Plain letter condition (ref = control) | 0.19 | .09 | 1.21 | .03 | [1.02, 1.44] |
| Plain e-mail condition (ref = control) | 0.10 | .09 | 1.10 | .27 | [0.93, 1.30] |
| Gender (ref = male) | 0.01 | .05 | 1.01 | .91 | [0.91, 1.12] |
| Age | 0.01 | .02 | 1.01 | .74 | [0.97, 1.04] |
| Initial accumulated debt | −0.06 | .01 | 0.94 | <.001 | [0.93, 0.95] |
| Number of eligible months left | 0.02 | .00 | 0.98 | <.001 | [0.97, 0.99] |
| Adjustments made before start (ref = no) | −1.12 | .08 | 0.33 | <.001 | [0.28, 0.38] |
| Initial loan amount | 0.72 | .03 | 2.05 | <.001 | [1.95, 2.16] |
| Questionnaire (ref = no) | 0.07 | .07 | 1.07 | .36 | [0.93, 1.23] |
| Unchanged | | | | | |
| Total debt condition (ref = control) | 0.06 | .06 | 1.06 | .39 | [0.93, 1.20] |
| Monthly repayment condition (ref = control) | 0.01 | .06 | 1.01 | .84 | [0.89, 1.15] |
| Plain letter condition (ref = control) | 0.08 | .07 | 1.08 | .25 | [0.95, 1.22] |
| Plain e-mail condition (ref = control) | −0.05 | .06 | 0.96 | .46 | [0.84, 1.08] |
| Gender (ref = male) | −0.05 | .04 | 0.96 | .25 | [0.88, 1.03] |
| Age | −0.00 | .01 | 1.00 | .90 | [0.98, 1.02] |
| Initial accumulated debt | −0.02 | .00 | 0.98 | <.001 | [0.97, 0.99] |
| Number of eligible months left | 0.01 | .00 | 1.01 | <.001 | [1.00, 1.01] |
| Adjustments made before start (ref = no) | −2.12 | .06 | 0.12 | <.001 | [0.11, 0.14] |
| Initial loan amount | 0.49 | .02 | 1.63 | <.001 | [1.57, 1.70] |
| Questionnaire (ref = no) | −0.05 | .06 | 0.95 | .36 | [0.85, 1.06] |

**Control variables.** The initial accumulated debt, the number of eligible months that were left, whether students adjusted their monthly loan amount in the year before our experiment, and their initial monthly loan amount were all significantly related to the amount with which students adjusted their monthly loan amount in April 2019 across conditions (see Table 4).[11]

### 3.4. Correction effect: Recalibration of the loan in June 2019

To investigate longer term effects of our interventions on the borrowing behaviour of students, we examined whether in June 2019, students again recalibrated their adjustments made in April 2019. Percentages of the different kind of recalibrations in June relative to April 2019 are depicted in Table 6.

We categorised students who initially adjusted their loan in April 2019 ($n = 5846$) into three groups: students who adjusted their loan in the same direction in June as in April ($n = 602$); students who did not make further adjustments in June ($n = 4144$); and students who adjusted their loan in June in the opposite direction as the adjustment in April ($n = 1100$).[12] We did not find any significant differences between any of the four experimental conditions and the control condition in the direction of further adjustments in June relative to April 2019 (all $ps > .30$, see Appendix Table 9).

See Table 7 for a summary of the results of the regression analyses performed to investigate the immediate and correction effects.

## 4. Discussion

In a large field experiment among students with a loan in the new Dutch student finance system, we examined whether providing students with personalised information about the future costs of their monthly loan amount (i.e., increasing the salience of the future costs) and the ease with which it can be adjusted (i.e., addressing the status quo bias), would increase students' recalibration of the monthly loan amount.

[11] Excluding the control variables from the analysis did not affect the pattern of our findings or whether the results were significant or not.

[12] We also ran a logistic regression analysis merely with the students that changed their monthly loan amount in April and June 2019 ($n = 1702$). Hence, students that did not make an additional change to their monthly loan amount in June were not included in this analysis. We again did not find any significant differences between any of the four experimental conditions and the control condition (all $ps > .60$).

**Table 4**
Results (parameter estimates, standard errors, $\beta$, p-values, and 95% confidence intervals) of the linear regression analysis of the magnitude of the adjustments (the difference in monthly loan amount between April 2019 and the start of the study; in euros), including control variables, and with the control condition as reference category.

| | *B* | *SE* | $\beta$ | *p* | 95% CI |
|---|---|---|---|---|---|
| Constant | 11.71 | 8.20 | | .15 | [−4.37, 27.78] |
| Total debt condition (ref = control) | −5.27 | 1.89 | −0.02 | .01 | [−8.98, −1.56] |
| Monthly repayment condition (ref = control) | −4.28 | 1.89 | −0.01 | .02 | [−7.99, −0.57] |
| Plain letter condition (ref = control) | −5.23 | 1.89 | −0.02 | .01 | [−8.94, −1.52] |
| Plain e-mail condition (ref = control) | −2.16 | 1.89 | −0.01 | .25 | [−5.86, 1.55] |
| Gender (ref = male) | −0.22 | 1.18 | −0.00 | .85 | [−2.54, 2.10] |
| Age | −0.38 | 0.35 | −0.01 | .28 | [−1.07, 0.31] |
| Initial accumulated debt | 2.25 | 0.10 | 0.18 | <.001 | [2.05, 2.45] |
| Number of eligible months left | 1.06 | 0.08 | 0.09 | <.001 | [0.91, 1.21] |
| Made adjustments before start (ref = no) | 5.89 | 1.31 | 0.02 | <.001 | [3.32, 8.47] |
| Initial loan amount | −22.48 | 0.56 | −0.24 | <.001 | [−23.57, −21.39] |
| Questionnaire (ref = no) | −2.06 | 1.64 | −.01 | .21 | [−5.27, 1.16] |

**Table 5**
Average loan in March 2019, average loan in April 2019, and the average difference between these variables ($\Delta_{April}$) *per condition.*

| | Control | Total debt | Monthly repayment | Plain letter | Plain e-mail |
|---|---|---|---|---|---|
| Loan in March 2019 | €652.63 | €647.32 | €650.59 | €644.46 | €647.87 |
| Loan in April 2019 | €651.92 | €639.37 | €643.43 | €636.64 | €642.74 |
| $\Delta_{April}$ | | | | | |
| All students ($n$ = 48,700) | -€2.71 | -€7.96** | -€7.16* | -€7.82** | -€5.13 |
| Students who changed their loan in April 2019 ($n$ = 5846) | -€24.32 | -€65.17 | -€56.74 | -€66.82 | -€41.47 |

In comparison to the control group.
*$p$ <.05.
**$p$ <.01.

**Table 6**
Percentages of the different kind of recalibrations that students' who adjusted their loan in April 2019 made in June, relative to their adjustment in April.

| | Total ($n$ = 5846) |
|---|---|
| Adjustment into the same direction as in April 2019 | |
| Increase in April, increase in June | 6.6% |
| Decrease in April, decrease in June | 3.7% |
| No change in June 2019 | 70.9% |
| Adjustment into the opposite direction as in April 2019 | |
| Completely reversed the adjustment | 6.6% |
| Decrease in April, increase in June — overall decrease relative to start | 3.4% |
| Decrease in April, increase in June — overall increase relative to start | 3.8% |
| Increase in April, decrease in June — overall increase relative to start | 2.2% |
| Increase in April, decrease in June — overall decrease relative to start | 2.8% |

**Table 7**
Summary of all results, depicting significant effects of the interventions on the different dependent variables (adjustments, direction, and magnitude of monthly loan amount), with the control condition as reference category.

| | Total debt | Monthly repayment | Plain letter | Plain e-mail |
|---|---|---|---|---|
| April 2019: Immediate effects | | | | |
| Adjustment to the monthly loan amount | | +1.5% | | +1.3% |
| Direction of the adjustments | Decrease | Decrease | Decrease | |
| Magnitude of the adjustments | −€5.25 | −€4.45 | −€5.11 | |
| June 2019: Correction effect | | | | |

In the month directly following our interventions, students who received the most elaborate letter recalibrated their monthly loan amount more than students who did not receive any information. This letter included information about the four steps with which the loan amount could be adjusted and the new calibration tool, together with personalised information about their current accumulated debt, their estimated debt after graduation, the expected monthly repayment, and the age at which the loan would be fully paid off. Compared to the control condition, students who received this letter were more likely to adjust their monthly loan amount, were more likely to decrease their monthly loan amount, and decreased their monthly loan amount to a greater extent. Students who received the letter including the four steps with which the loan amount could be adjusted and information about the new tool, next to personalised information about the current accumulated debt and the estimated debt after graduation, but no further information about monthly repayments — showed similar, but less clear behavioural patterns. The likelihood that students adjusted their loan following this less extensive letter did not differ from the students who did not receive any information. The 'informed' students, however, were more likely than the 'control' students to decrease their monthly loan amount, and to do so to a larger extent. Thus, our results showed that students were more likely to decrease their monthly loan amount and to do so to a larger extent when they were provided, in addition to information about the ease of adjusting one's monthly loan amount, with personalised information about their current and estimated future accumulated debt. This was the case irrespective of whether students were informed about the future monthly repayment and how old they would be when their debt would be fully paid off. Students, however, were only more likely to adjust their monthly loan amount if the personalised information also

included details about their expected monthly repayment and the age at which they would be 'debt-free'.

Unlike previous findings in the United States (Barr et al., 2016; Darolia, 2016), results of our study among Dutch students showed that the effects of our interventions on the recalibration of the monthly loan amount was independent from students' initial monthly loan amount. That is, after receiving our letters including the personalised information, students with a higher monthly loan amount were not more likely to adjust their monthly loan amount and did not decrease their monthly loan amount more frequently or to a greater extent than students with a lower initial monthly loan amount.

Effects of sending students a 'plain' letter or e-mail that only directed them to the new loan calibration tool and that highlighted the four steps with which the monthly loan amount could be adjusted, were less straightforward, and influenced different aspects of students' loan recalibration differently. In comparison to students who did not receive any information, students were more likely to adjust their monthly loan amount after receiving the *e-mail* with the link to the new tool and the information about the ease with which the loan could be adjusted, but not after receiving the *letter*. Conversely, after receiving the *letter*, students were more likely to decrease their monthly loan amount and to decrease it more, whereas this was not the case for students who received the *e-mail*.

Among students that made a change to their monthly loan amount immediately following our interventions in April 2019, we did not find any differences between the experimental conditions and the control condition in subsequent adjustments made in June 2019. This lack of possible correction effects is a first indication that students who made an initial adjustments following our interventions, did not regret this decision.

Overall, the intervention that yielded the most stable effects on students' recalibration of their monthly loan amount, was the most elaborate letter in the monthly repayment condition. This letter increased the salience of the future costs the most, by including not only information about the current and future accumulated debt, but also about the expected monthly repayment and the age at which the loan would be fully paid off. Additionally, like the other conditions, it addressed the status quo bias by explaining how quickly and easily the monthly loan amount could be adjusted. After receiving this most elaborate letter, 13.6% more students adjusted their loan compared to students in the control condition who did not receive any information. In April 2019, students in the control condition mostly increased their loan (i.e., 47.3% decreased and 52.7% increased their monthly loan amount). Whereas those in the monthly repayment condition, students mostly decreased their loan (i.e., 53.3% decreased and 46.7% increased their monthly loan amount). Furthermore, the letter of the monthly repayment condition led students to decrease their monthly loan amount to a larger extent than students who did not receive any information: students who after receiving the most elaborate letter adjusted their monthly loan amount in April 2019, decreased it with on average €56.74, compared to a decrease of on average €24.32 in the control condition. This would translate into a decrease of €1167 in accumulated student debt if students would take out this student loan for three more years.

### 4.1. Possible limitations and direction for future research

Whereas our interventions generally increased students' recalibration of their monthly loan amount, our study has its limitations. A first limitation concerns the operationalisation of recalibration in our study, which was done in three different ways: we investigated whether students adjusted their monthly loan amount, as well as the direction and the magnitude of the adjustment. While it can be argued that students who adjusted their monthly loan amount engaged in recalibration, this does not mean that students who did not to make any adjustments did *not* reconsider their loan. Thus, our measures could be considered a conservative assessment of loan recalibration. To capture the students who left their monthly loan amount unchanged, but did recalibrate their decision, future research might combine actual borrowing behaviour with interviews or a survey that assesses, for example, whether students re-evaluated their monthly loan amount after having received the letter or e-mail, and, if they left their loan unchanged, why this was the case.

A second limitation, is that it is impossible – based on the available data – to adequately judge whether the recalibration of the monthly loan amount involved a 'wise' decision, that is, whether the chosen adjustment suited students' current financial situation well. In comparison to students who did not receive any information, students who received a letter generally decreased their monthly loan amount to a larger extent. Considering the observation that Dutch students might be overborrowing (Van der Werf et al., 2017), it is likely that confronting students with the future financial costs of their borrowing behaviour, would lead to a downward adjustment of their monthly loan amount. Additionally, the absence of a stronger correction effect for students that received our intervention, suggests that students did not immediately regret their adjustment. We were not able to assess, however, how the borrowing decisions that students made following our interventions, affected their financial situation. If students decreased their monthly loan amount such that they are no longer able to make ends meet, the decision to lower the monthly loan amount would not suit their financial situation best. Future research might want to investigate this by incorporating more aspects of students' individual financial contexts – such as their income out of work, or other loans that students take out or debts that they take on – and by monitoring students' loan behaviour for a longer period to examine whether downward adjustment of their monthly loan amount contributes to financial stress and financial problems later.

A final limitation concerns the biases that our interventions address. Our interventions simultaneously made the future costs of the student loan more salient and counteracted the status quo bias by emphasising the ease with which the monthly loan amount could be adjusted. As our two main experimental conditions (i.e., the total debt and the monthly repayment condition) included both these elements, we are not able to tell whether both elements are necessary or that each of the elements separately is sufficient to activate students to recalibrate their monthly loan amount. The main aim of the current study, however, was to increase loan recalibration. Due to the way the loan application process is currently designed, we felt it was necessary to address both aspects and undertake a more ubiquitous approach. Future research could further disentangle the unique importance of each element for facilitating loan recalibrations.

### 4.2. Implications for developing and testing new policies

The findings of our intervention point to several implications for testing and developing new policy. From our results, it first can be concluded that personalised information is more effective in increasing students' loan recalibrations than merely directing students to an interactive online tool. The way in which the personalised information is presented, however, is important. Including more detailed information about the future costs by adding the monthly repayment and the age at which the loan will be fully paid off – which arguably makes the future costs even more salient than in the total debt condition – led to the most

**Table 8**
Distribution per condition of demographic variables and loan characteristics.

| | Control | Total debt | Monthly repayment | Plain letter | Plain e-mail | Total |
|---|---|---|---|---|---|---|
| Female | 52.8%[a] | 53.5%[a] | 51.8%[b] | 53.0%[a] | 52.7%[a] | 52.8% |
| Age | | | | | | |
| *Mean* | 20.94[a] | 20.58[b] | 20.91[a] | 20.64[b] | 20.92[a] | 20.80 |
| *Median* | 21.00 | 20.00 | 21.00 | 20.00 | 21.00 | 21.00 |
| *Standard deviation* | 1.96 | 1.90 | 1.92 | 1.94 | 1.94 | 1.94 |
| Supplementary grant | 25.3% | 25.1% | 25.5% | 26.1% | 25.2% | 25.4% |
| Number of eligible months left | | | | | | |
| *Mean* | 25.84 | 26.18 | 26.23 | 26.16 | 26.09 | 25.84 |
| *Median* | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 |
| *Standard deviation* | 11.63 | 11.65 | 11.66 | 11.72 | 11.71 | 11.67 |

*Note.* Percentages or averages within a row with different superscripts differ significantly from each other ($p < .05$).

**Table 9**
Results (parameter estimates, standard errors, odds ratio's, p-values, and 95% confidence intervals) of the multinomial logistic regression analysis with students that recalibrated their loan in April. Including control variables, students' adjustments to their monthly loan amount in June in comparison to April 2019 (same direction/unchanged/opposite direction, with opposite direction as reference category) as the dependent variable, and the control condition as reference category.

| | *B* | *SE* | *OR* | *p* | 95% CI |
|---|---|---|---|---|---|
| Same direction | | | | | |
| Total debt condition (ref = control) | 0.03 | .17 | 1.03 | .85 | [0.75, 1.43] |
| Monthly repayment condition (ref = control) | −0.05 | .17 | 0.95 | .78 | [0.68, 1.33] |
| Plain letter condition (ref = control) | 0.07 | .17 | 1.07 | .69 | [0.77, 1.48] |
| Plain e-mail condition (ref = control) | 0.09 | .17 | 1.09 | .59 | [0.79, 1.51] |
| Gender (ref = male) | 0.09 | .10 | 1.09 | .41 | [0.89, 1.33] |
| Age | −0.06 | .04 | 0.94 | .09 | [0.88, 1.01] |
| Initial accumulated debt | 0.01 | .01 | 1.01 | .16 | [1.00, 1.03] |
| Number of eligible months left | −0.00 | .01 | 1.00 | .84 | [0.99, 1.01] |
| Adjustments made before start (ref = no) | −0.25 | .21 | 0.78 | .23 | [0.52, 1.17] |
| Initial loan amount | −0.12 | .05 | 0.89 | .01 | [0.81, 0.98] |
| Questionnaire (ref = no) | 0.03 | .14 | 1.03 | .83 | [0.79, 1.34] |
| Unchanged | | | | | |
| Total debt condition (ref = control) | −0.04 | .11 | 0.96 | .70 | [0.77, 1.19] |
| Monthly repayment condition (ref = control) | 0.11 | .11 | 1.11 | .36 | [0.89, 1.39] |
| Plain letter condition (ref = control) | −0.08 | .11 | 0.92 | .47 | [0.74, 1.15] |
| Plain e-mail condition (ref = control) | −0.01 | .11 | 0.99 | .95 | [0.80, 1.24] |
| Gender (ref = male) | −0.05 | .07 | 0.96 | .51 | [0.83, 1.10] |
| Age | 0.05 | .02 | 1.05 | .05 | [1.00, 1.09] |
| Initial accumulated debt | 0.02 | .01 | 1.02 | .00 | [1.01, 1.04] |
| Number of eligible months left | 0.01 | .00 | 1.01 | .00 | [1.01, 1.02] |
| Adjustments made before start (ref = no) | −1.35 | .14 | 0.26 | <.001 | [0.20, 0.34] |
| Initial loan amount | 0.09 | .03 | 1.10 | .00 | [1.03, 1.17] |
| Questionnaire (ref = no) | −0.04 | .04 | 0.96 | .63 | [0.80, 1.15] |

stable results. Hence, if policy makers would want to facilitate well-calibrated decision-making about student loans, we would advise to send students a letter containing a complete overview of their current and future loan situation.

It might be worthwhile to track students' borrowing behaviour for a longer period, in order to establish whether the interventions yield a sustainable change in students' thinking about their student loan, or whether its effects are short-lasting. If the interventions only evoke immediate and temporary behavioural change, policy makers could consider providing students with information about their current and future loan situation on a more frequent basis, for example, every year. It would be well-advised, however, to also investigate the effects of these kind of repeated messages, as it could influence borrowing behaviour differently.

It might also be worthwhile to test whether the timing that we chose for the interventions, influenced our effects. Students can respond differently to the same intervention at different moments in time. Our interventions were all sent at the end of March 2019, in the middle of the academic year. Periods of transition – such as the start of a new academic year, or the start of a study for a Master's degree – are moments at which people are particularly likely to change their habits (The Behavioural Insights Team, 2014). It would therefore be useful to think about moments at which students might be most receptive for information about their student loan, because this could increase the impact of the interventions

Additionally, policy makers might want to examine whether it is possible to adjust the loan application process (i.e., the choice architecture) in such a way that it does not lead to biased decision-making. Our interventions were designed to counteract biases that are present in the current choice architecture, but we did not change any aspects of the application process itself. Designing the application process in a particular way, however, may further facilitate well-calibrated loan decisions by students. For example, when taking out a loan, students could immediately be provided with an estimation of the future costs of their loan, to prevent them to merely focus on the current benefits of their loan (i.e., the money they will receive each month). More thoughtful loan calibrations can also be evoked by changing the current default that the monthly student loan stays unchanged until the loan is terminated, into one where students are required to reinstate their student loan amount before the start of every new academic year. Such more structural changes to the loan environment will likely evoke larger and more sustainable effects on students' borrowing behaviour than merely addressing loan decision biases with informational interventions (Loewenstein and Chater, 2017). Before implementing more structural changes on a large scale, however, it is important to thoroughly test any adjustments to the loan environment. Its effects should be carefully monitored for potential negative consequences, as to make sure that these adjustments do not, for example, discourage students from starting a higher education or lead to financial problems for students.

## 5. Conclusion

As observed elsewhere, over the last few years, student debt in the Netherlands has drastically increased, raising concerns about overborrowing among students. This would be worrisome, because an outstanding student debt could impact students' disposable income for up to 35 years. The current loan application process seems to lead to biased decision-making, by merely focusing on the current benefits of the loan (i.e., the money they receive each month), and the fact that by default the amount of the monthly loan stays the same until termination. To address these biases, in the current study, we compared the effectiveness of several interventions that informed students about the future costs of their student loan and the ease with which it could be adjusted. Our study revealed that all interventions were somewhat effective, but that the intervention that addressed these biases simultaneously, led students to adjust their monthly loan amount the most frequently and to the greatest extent. Together, these findings provide promising new ways in which well-calibrated decision-making about student loans can be encouraged.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Appendix

See Tables 8 and 9.

## References


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