Financial stress by design: examining barriers to social welfare take-up

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Chapter 6

Psychological barriers to take-up of healthcare and child support benefits in the Netherlands

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ABSTRACT

We empirically test an integral model for healthcare and child support benefits take-up using a probability sample of the Dutch population (N = 905). To examine how different psychological factors, in conjunction, explain take-up, we apply model averaging with Akaike's Information Criterion (AIC_C). People's perceptions of eligibility best explain take-up for both types of benefits. For healthcare benefits, take-up also relates to perceptions of need. Exploratory analyses suggest that for healthcare benefits but not for child support benefits, executive functions, self-efficacy, fear of reclaims, financial stress, and welfare stigma explain perceived eligibility. We find no support for knowledge, support, and administrative burden as explanatory factors in take-up. We discuss the results in relation to the Capability Opportunity Motivation Behavior (COM-B) model for developing behavioral change interventions.

INTRODUCTION

Social welfare provides income security for financially vulnerable households and can counteract financial distress. Many eligible families, however, do not claim social welfare. Non-take-up rates vary between countries and programs, but 30 to 40% rates are not exceptional[1–3]. From a policy perspective, this implies that social welfare systems are not fully achieving their goals, which may undermine their legitimacy[4]. For eligible households, not claiming social welfare negatively affects their current well-being. Moreover, it affects their future well-being, as the non-take-up of welfare hampers saving for rainy days and investing in the future. Thus, the non-take-up of social welfare may exacerbate financial distress and contribute to poverty traps[5].

To develop effective interventions to increase take-up, it is essential first to identify which factors contribute most strongly to the observed non-take-up. The study of welfare participation started almost a century ago. Yet, until this day, empirical evidence is fragmented, and most studies examine a limited set of potential inhibitors. Scholars in the domains of social policy and public administration initially studied welfare participation. Early social policy literature on the take-up of welfare assigned a prominent role to welfare stigma[6,7]. Later studies provided a more integrative view of welfare participation. They included the influence on benefits take-up of perceived eligibility, perceived need, knowledge, attitudes towards and expectations of the application procedure, and perceived stability[8–11]. Standard economic models predict that households participate in welfare programs if the benefits outweigh the costs[12–15].

In the last two decades, behavioral insights have contributed significantly to the welfare participation literature. In public administration, scholars have realised that administrative burden, defined as "an individual's experience of policy implementation as onerous," looms larger for citizens with lower levels of human capital[16–18]. Also, they have pointed out the executive functions' potential role in inhibiting take-up[19,20]. Behavioral economists have developed interventions to increase welfare participation, thereby deepening the understanding of welfare participation's psychological inhibitors and promotors[21–27]. Important findings are that increasing the salience of households' eligibility for welfare and simplifying application processes can increase take-up. Studies like these have added significantly to the understanding of non-take-up by adding behavioral insights, but only included a limited number of potential promotors and inhibitors of welfare participation.

The current study integrates theoretical and empirical economics, public administration, and psychology findings into one model. It tests how different psychological factors, in conjunction, explain welfare take-up for two national Dutch benefits programs: healthcare and child support benefits. It adds to the existing literature by identifying the relative strengths of different promotors and inhibitors of welfare participation, which may help design possible interventions. The remainder of this article is organized as follows. We first give an overview of the explanatory factors for take-up in our model based on the literature. Next, we describe our methodological approach and present the results. Finally, we conclude and provide suggestions for policy and future research.

FACTORS PROMOTING AND INHIBITING TAKE-UP

We use the COM-B framework designed by Michie et al.[28] as a conceptual framework to organize promoting and inhibiting factors from the literature on welfare participation. This model is explicitly designed to understand behavior and identify possible routes to promote behavior change and interventions. The COM-B model identifies three groups of factors that need to be present for any behavior to occur: capability, opportunity, and motivation (see Figure 1). In the following, we apply this framework to organize the driving factors contributing to household welfare take-up behavior. Combining potential promotors and inhibitors into one model allows us to empirically test these factors' relative strengths.

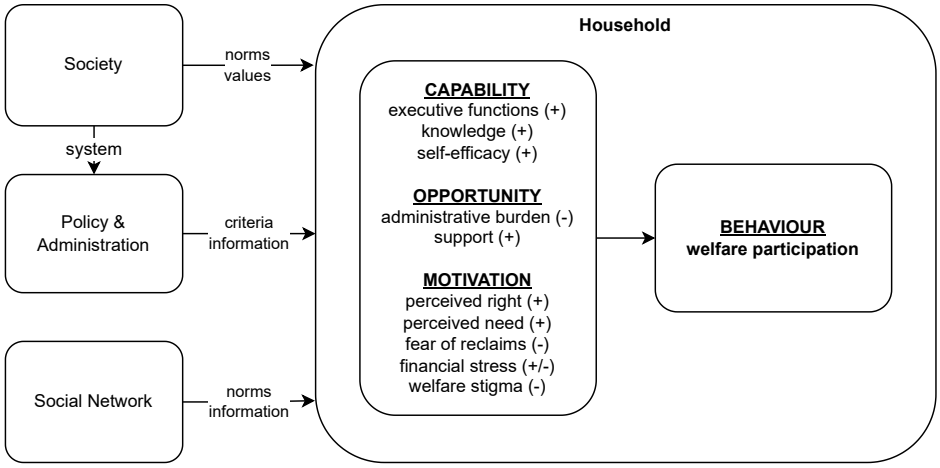

Figure 1. Conceptual model: factors promoting (+) and inhibiting (-) welfare participation

In line with the COM-B model, our framework is dynamic and recursive. Households eligible for welfare go through an application process that consumes time. We propose that households are passively eligible (i) until the occurrence of some trigger. Van Oorschot[11] describes triggers as "Sudden events which have the power of inducing claims quickly" (p. 78). Examples include substantial income drops, direct advice, and encouragement to eligible people in personal contact. After a trigger, households go through an orientation (ii) and an application stage (iii). When the administration refuses the application, households may go through an appeal stage (iv). Finally, households must provide updates on their circumstances that affect their eligibility to the welfare administration (v). Households can thus move back and forth between these five stages. At each stage, different factors may promote and inhibit proceeding to the next stage.

The current study focuses on the behavior of individual households. This behavior, however, crucially depends on the context in which they operate. Society, welfare policy and administration, social networks, and individual households collectively determine the outcomes of the welfare system. Society influences welfare behavior by establishing eligibility rules that may, in turn, affect welfare participation[11,29,30]. A second way society influences welfare participation is through values and norms. In societies that regard welfare negatively, eligible households may experience more welfare stigma and feel less deserving than those with a more positive view of welfare[31]. Welfare policy may also affect the behaviors of street-level administrators that promote or inhibit take-up by eligible households[32,33]. Social networks may influence the norms surrounding welfare participation and thereby affect stigma. Also, social networks can provide information on programs and assistance in the application procedure[34–36].

Capability factors

Michie et al.[28] define capability as "the physical and psychological capacity to engage in the behavior." (p. 4). Based on the take-up literature, we propose that capability includes executive functions, knowledge, self-efficacy, and financial stress.

Executive functions refer to a family of top-down mental processes needed when you have to concentrate and pay attention when relying on automatic tendencies or intuition would be ill-advised, insufficient, or impossible[37]. Executive functions consist of working memory, inhibitory control, and cognitive flexibility. Research on the potential role of executive functions in welfare participation is relatively new and results from applying psychology to public administration research. Christensen et al.[20] proposed that executive functions are essential in non-take-up. They argued that those needing assistance might lack the "cognitive resources required to negotiate the burdens they encounter while seeking such assistance." This theoretical notion still lacks empirical support.

Knowledge. Early public administration frameworks included knowledge of a welfare program as a threshold eligible households had to pass before deciding to claim[9–11]. The rationale is that eligible households need to know that a program exists and understand its main characteristics to participate. Recent empirical evidence indicates that pointing households to their eligibility for welfare may increase take-up, although the evidence is mixed. For example, Finkelstein and Notowidigdo[38] demonstrated in a large-scale American

food stamp program (SNAP) experiment that sending eligible, non-claiming households a mail and a reminder postcard increased take-up. In another experiment, Bhargava and Manoli[21] sent reminders to people who had been asked to request earned income tax credit (EITC) but had not done so. The letters resulted in a 22% increase in applications. However, Linos et al.[39] found that behaviorally informed messages to non-claimants of EITC did not increase take-up.

Self-efficacy refers to an individual's belief in one's capacity to execute behaviors necessary to produce specific performance attainments[40,41]. Self-efficacy influences financial behaviors, such as saving, investing, and borrowing[42–44]. Self-efficacy may also affect welfare participation. To our knowledge, no studies have examined this relationship.

Financial stress is the subjective feeling of having too few financial resources. The experience of financial stress occurs when pressing financial concerns are appraised as exceeding available resources that, in turn, evoke worry, rumination, and a short-term focus[45]. Financial stress is associated with different aspects of one's objective economic situation, such as low income, debts, and the absence of savings[46–48]. Mullainathan and Shafir[49] proposed that financial stress causes tunnel vision; it draws attention towards the instant issue of making ends meet and away from other issues. This tunnel vision impairs different aspects of executive functions[50–53]. Also, financial stress is associated with avoiding financial information[54]. It seems plausible that financial stress inhibits welfare take-up because this involves processing complex information, problem-solving, and perseverance.

On the other hand, a high level of financial stress could be associated with a higher degree of need for welfare and a higher degree of perceived eligibility and, therefore, be associated with a higher probability of benefits take-up. We are unaware of studies that empirically attempted to establish the role of financial stress in welfare participation. This line of investigation, therefore, deserves further attention.

Opportunity factors

Opportunity entails "all the factors outside the individual that make the behavior possible or prompt it."[28](p. 4) We propose that households' opportunity to take up benefits depends negatively on administrative burden and positively on support.

Administrative burden is "an individual's experience of policy implementation as onerous"[16] (p. S69). There is ample evidence that administrative burden affects vulnerable groups more than others[17,18,55]. Experimental evidence confirms that decreasing administrative burden can increase take-up. For example, Fox, Stazyk, and Feng[56] found that reducing administrative burden increased the take-up of Medicaid. Bhargava and Manoli[21] found that simplifying the reminder letters greatly affected take-up (23%, compared to 14% in the control group).

Support. Several studies have demonstrated that professional or social network assistance and support may promote welfare participation. In a small-scale field experiment, interviewers answered questions of households eligible for food stamps. This intervention increased participation rates compared to the control group[57]. Finkelstein and Notowidigdo[25] found that providing assistance and sending reminders increased take-up from 11% to 19%. Other studies have found that support from social networks may also increase take-up[34,36,58].

Motivational factors

Motivation involves "all those brain processes that energize and direct behavior [...]. It includes habitual processes, emotional responses, and analytical decision-making"[28] (p. 4). We propose that households' motivation to participate in welfare programs relates positively to perceived eligibility and perceived need and negatively to fear of reclaims, financial stress, and welfare stigma.

Perceived eligibility. Public administration literature often mentions perceived eligibility as a threshold for welfare participation[9,10]. According to Ritchie and Matthews[59], perceived eligibility includes "ethical, factual and emotional notions about who could and should receive the benefit"[8] (p. 548). From the finding that a relatively large proportion of non-claimants thought they were ineligible, Van Oorschot[11] concluded that perceived eligibility was a threshold for claiming.

Perceived need. Public administration and economic studies of welfare participation have consistently included perceived need or utility as a relevant factor. For example, Ritchie and Matthews[59] proposed that income adequacy - the ability to make ends meet - serves as a threshold for welfare participation. Many economic studies have found a positive correlation between the potential amount and duration of welfare and take-up. For example, Anderson and

Meyer[12] found that welfare becoming subject to income tax almost entirely explained the decrease in the take-up of unemployment insurance in the US in the 1980s. Dahan and Nisan[60] found that the welfare amount was crucial in shaping take-up rates. These findings confirm that eligible households are more likely to take up benefits as they derive more utility from doing so. In the current study, we conceptualized perceived need as the subjective assessment of a household's need to receive benefits, distinguishing it from objective factors such as income and benefits amount.

Fear of reclaims. The public administration and behavioral economics literature mentions the fear of reclaims or sanctions as a potential inhibitor of welfare participation. There is some evidence that benefits recipients may fear sanctions due to unjustly received benefits[61,62]. In a qualitative study among low-income households in the Netherlands, Simonse et al.[63] found that the fear of reclaims was the main reason respondents refrained from welfare participation. Bhargava and Manoli[21] found that attempts to reduce fear of audits had little effect. So, although there are theoretical reasons for fear of reclaims inhibiting take-up, empirical evidence is scarce, and results are ambiguous.

Welfare stigma. There is a rich literature indicating that stigma is associated with welfare participation, depending on the cultural context (e.g., the attitude towards welfare), the type of program (e.g., the generosity), and characteristics of the participants (e.g., blame, identification)[6,64]. Moffitt[14] was the first to quantify the role of stigma in inhibiting welfare participation. His economic model of welfare stigma demonstrated a negative appetite for participating in welfare programs. Currie and Grogger[65] observed that electronic benefits transfer increased the take-up of Food Stamps in the US and argued that this confirmed the role of stigma in take-up. Mood[15] posited that welfare stigma in Australia was low because take-up was high. Bhargava and Manoli[21] tested several interventions to increase the take-up of earned income tax credit (EITC) in the US and concluded that stigma played an insignificant role in EITC take-up. Wildeboer Schut and Hoff[66] concluded that stigma was relatively high but unrelated to non-take-up. In a cleverly designed lab experiment, Friedrichsen[67] provided causal evidence that social stigma inhibits take-up: participants were more reluctant to take up a redistributive transfer when claiming was publicly observable. Overall, the literature suggests that stigma may play a role in the non-take-up of social welfare. However, the difference in operationalization makes it difficult to judge how welfare stigma explains non-take-up in different contexts.

Many potential promotors and inhibitors of welfare participation have emerged from the literature. There is empirical evidence for some of these factors, whereas the evidence is mixed, unclear, or lacking for other factors. Also, most empirical studies have focused on one or a few potential promotors or inhibitors. To our knowledge, no integral empirical studies examine these factors in conjunction and within one theoretical framework. We, therefore, examine the relative contributions of different factors using the COM-B framework.

METHODOLOGICAL APPROACH

In this cross-sectional study, we surveyed participants of the Longitudinal Internet Studies on Social Sciences (LISS) panel administered by Centerdata. We administered the survey in July 2020. The panel is based on a probability sample of households drawn from the population register by Statistics Netherlands[68]. If needed, Centerdata provides households with a computer or internet connection so that vulnerable households can participate. Respondents fill in monthly questionnaires on various topics, including their economic situation. This enabled us to link eligibility for healthcare and child support benefits with our survey results. We selected respondents based on eligibility for either of the two benefits.

Dependent variables and respondent selection

We asked respondents to indicate which of the two benefits they had used in 2020 (only child support benefits, only healthcare benefits, neither, or both). Based on their responses, we could determine take-up, the dependent variable in our models.

Table 2. Healthcare benefits and child support benefits

Healthcare benefits and child support benefits in the Netherlands
Healthcare benefits (HCB, *zorgtoeslag*) are means-tested benefits that support low-income families in paying for their mandatory health insurance[69]. Individuals aged 18 or more are eligible when they use health insurance in the Netherlands, pay the premium, and meet the income and asset thresholds (on the household level).
Child support benefits (CSB, *kindgebonden budget*) cover costs such as children's clothing, food, and school expenses for low-income households[70]. The program is meant for those who have children under 18 (including stepchildren, foster children, and adopted children), meet income and asset criteria, and receive a general child allowance (GCA, *kinderbijslag*).

Table 2 contains a short description of the two benefits that are the subjects of the current study. The Appendix includes the detailed eligibility criteria for the two benefits. For healthcare benefits, we selected respondents 18 years and older with (household) incomes and assets below the eligibility thresholds. We calculated gross household income as the sum of monthly household incomes in 2020. Since healthcare insurance is mandatory in the Netherlands, we assumed all respondents had insurance and paid their premiums. The last criterion is an approximation, but the number of people not paying their health insurance premium is low (around 2%). We disregarded the special situations described in the Appendix for the same reason.

For child support benefits, we selected households with assets below the asset thresholds and for whom their children's birth years were known. Next, we calculated the eligible amounts based on income and children's ages[a]. We asked respondents whether they or their partners received a general child allowance as a final check. For respondents who indicated having a partner, we assumed their partner was also their benefits partner. This assumption holds for almost all households.

Independent variables

The survey included three multiple-choice questions to measure knowledge and Likert items (1 = *fully disagree* ... 7 = *fully agree*) to measure the other independent variables. The Appendix contains the complete questionnaire.

Capability. We measured executive functions with the twelve-item Amsterdam Executive Function Index (AEFI)[71]. Items included "I am easily distracted" and "I often react too fast. I've done or said something before it was my turn". The internal consistency is high (Cronbach's α = .84). Three multiple-choice questions measured knowledge: one on healthcare benefits, one on child support benefits, and one on benefits in general. We created two separate knowledge variables from these questions: one for healthcare benefits and one for child support benefits. Each variable included a specific question and a general question. We captured self-efficacy with three items, including "If I want, I can easily apply for benefits" and "Even if I would try hard, I don't think I would succeed in applying for benefits" (α = .80). We captured financial stress with the five-item version of the Psychological Inventory of Financial Scarcity (PIFS)[54]. Items included "I often don't have enough money" and "I feel that I have little control over my financial situation" (α = .93).

Opportunity. We measured administrative burden with a three-item scale. One example of an item was "Applying for benefits involves much hassle" (α = .91). Our support scale consisted of three items, including "If I don't succeed in applying for benefits, I know whom to turn to for help" (α = .87).

a The eligible amount may depend on the birth date of the children. For example, if a child turns 16 during the year, the eligible amount for the second part of the year is higher than for the first part of the year. The date of birth of the children was not known. We calculated a minimum and maximum eligible amount, based on two potential birth dates (January 1st and December 31st). There were very few (4) households for which the eligibility changed depending on the chosen dates. We used the minimums in our calculations.

Motivation. We asked respondents, "I think I am eligible for ... benefits," to measure perceived eligibility. For perceived need, we asked, "Without ... benefits, it is difficult for me to make ends meet," and "... benefits are worthwhile for me". The correlations between the items for perceived need are moderate (r_s = .64 for healthcare benefits and .61 for child support benefits). We assessed fear of reclaims with three questions, including "I am worried that I have to repay benefits because of a mistake" (α = .91). We assessed welfare stigma with a tailored three-item Consciousness Scale[72,73]. One question was, "There are negative prejudices about people who use child support or healthcare benefits." The internal consistency of the welfare stigma scale is moderate (α = .74). We used the full scale in our analyses[b].

Control variables

There is substantive evidence that income, benefits amount, age, household composition, and gender may relate to the take-up of welfare[74]. We, therefore, included these variables as control variables in our analyses to eliminate alternative explanations and demonstrate the unique relationship between psychological predictors and welfare participation. Centerdata takes several measures to increase the quality of self-reported income data. Households are asked to provide their income shortly after the due date for the tax declaration. Centerdata informs households which figures from their tax declaration they should use for gross and net income. Finally, if gross income is missing, Centerdata calculates it based on net income and vice versa.

Analytical model

Because take-up for the two benefits ranged between 56% and 69%, we used a linear probability model, which is easier to interpret than a binomial model[75]. The following formula mathematically represents our model:

$$P(y_i = 1) = \alpha_i + \beta_i X_i + \eta_i, \quad (1)$$

where i ∈ {1,2} represents the type of benefit (i = 1 refers to healthcare benefits and i = 2 to child support benefits); y_i is a vector of length N_i representing the take-up for the two types of benefits ($y_i \in \{0,1\}$), where 0 corresponds to non-take-up and

b As a robustness check, we repeated our main analysis using the two items with the highest correlations (r_S = .63): "People in my environment have a negative view of those who use welfare" and "There are negative prejudices about people who use benefits". Because this did not change the results, we report the results with the full scale.

1 to take-up; X_i is a matrix of size m*N_i representing the independent variables and control variables; α_i are the intercept terms for the two equations; β_i is a vector of length *m* representing the regression coefficients and η_i finally, represents a vector of length N_i of the error terms.

Multimodel inference

Using a corrected version of Akaike's Information Criterion (AICC)76,77, we applied multimodel inference based on an information-theoretical framework. Akaike's framework is well suited for model selection, especially if the purpose is to explain (rather than predict) the phenomenon under investigation[78,79]. Also, the framework guards against overfitting[80]. Overfitting increases the probability of finding spurious effects [81] and decreases generalizability[82]. The traditional approach to overfitting, stepwise regression, leads to incorrect standard errors of the parameter estimates. As a result, relevant variables may not be selected for the model, and nuisance variables may be included, which leads to incorrect inferences [83]. Regularization (or shrinkage) mechanisms such as Ridge regression, LASSO, and Elastic Net are alternatives for stepwise regression[84–86]. A flaw of regularization mechanisms is that they base inference on a "best" model and disregard model uncertainty, which leads to underestimation of the residual variance[87] and over-confident inferences[88]. Model averaging based on Akaike weights overcomes this problem[81,89,90].

RESULTS

Data inspection

The original sample contains 951 eligible respondents. We removed eight respondents from the sample who did not complete the survey. For 38 respondents, we could not determine eligibility because of missing income data. In line with Allison[91], we removed these respondents from the sample. Inspection of the histograms reveals that most of the independent variables are skewed. Yet, there are few outliers: three for executive functions and none for the other independent variables[c].

The final sample (N = 905) includes 715 respondents eligible for healthcare benefits, of whom 220 did not claim in 2020 (Table 2). Regarding child support benefits, 238 respondents were eligible, of whom 97 did not claim (Table 3). Of the respondents, 48 were eligible for both benefits in 2020. We found a non-take-up rate of 31% (95% CI 27%-34%) for healthcare benefits and 41% (95% CI 35%-47%) for child support benefits. These non-take-up rates are considerably higher than the last known rates reported by Berkhout et al.[74]: 16% and 15%, respectively. A large amount of negative publicity around benefits in Dutch media due to a scandal involving tens of thousands of unjust reclaims may have contributed to increased mistrust in the Tax Administration, fear of reclaims, and lower take-up rates.

Descriptive statistics

The mean household income for the sample is € 30,076 (Mdn = € 26,400, SD = 15,860), which is lower than the mean for the Dutch population (M = € 32,400, Mdn = € 28,600)[93]. The sample comprises 52% females; the respondents are between 20 and 93 years old (M = 57.00, SD = 17.21). The mean household size is 2.14 (SD = 1.39), which corresponds well with the population's mean (M = 2.17). We created two samples from the total sample: one for health care benefits (N = 715) and one for child support benefits (N = 238).

Healthcare benefits

The mean income of respondents eligible for healthcare benefits (M = € 23,701, SD = 7,967) is below the population mean (Table 2). This is likely due to healthcare benefits aimed at low-income households. The mean eligible amount is € 1,055

c We calculated the number of outliers as proposed by D'Orazio[92]: Q1 − 2k × (Q2 − Q1); Q3 + 2k × (Q3 − Q2) being Q2 the median; this method accounts for slight skewness of the distribution.

(*SD* = 569). Respondents in the healthcare benefits subsample are somewhat older and belong to smaller households than the full sample (*M* = 60.04, *SD* = 17.89). Of the respondents, 20% fully disagree with the statement "I think I am eligible for healthcare benefits", whereas 54% fully agree. The remaining 26% are not (entirely) certain about their eligibility. Self-efficacy, knowledge, financial stress, support, perceived eligibility, and perceived need were higher in the take-up group. In contrast, executive functions, administrative burden, and fear of reclaims were higher in the non-take-up group. Welfare stigma did not differ between the two groups. Spearman's correlations of take-up with most of the variables of interest are weak, with some exceptions (Appendix, Table A1). Take-up of healthcare benefits correlates strongly with perceived eligibility (r_S = .76) and moderately with income (r_S = -.40) and perceived need (r_S = .64).

Child support benefits

For respondents eligible for child support benefits, the mean income is above the population mean (*M* = € 48,061, *SD* = 18,343) (Table 3). In contrast to healthcare benefits, child support benefits do not target low-income households; income thresholds are higher. Child support benefits target families with children, many of whom are two-income households. The mean eligible amount is € 4,847 (*SD* = 4,696). The mean household size (*M* = 4.06, *SD* = 1.15) is higher, and the mean age (*M* = 45.06, *SD* = 7.45) is lower than the healthcare benefits sample. These findings are in line with child support benefits targeting families with children. Notably, 62% of the respondents in this group are female. For child support benefits, 16% of eligible households fully disagree with the statement "I think I am eligible for child support benefits", whereas 36% fully agree. The remaining 48% are not (entirely) certain about their eligibility. Results show that self-efficacy, knowledge, financial stress, support, perceived eligibility, perceived need, and fear of reclaims were higher in the take-up group. Administrative burden and stigma were higher in the non-take-up group. There was no difference in executive functions between the two groups. This pattern differs somewhat from the pattern observed for healthcare benefits. The most notable difference occurs for fear of reclaims: for healthcare benefits, the fear of reclaims is higher in the non-take-up group, whereas for child support benefits, the fear of reclaims is higher in the take-up group. We observed no difference in child support benefits between the two groups, whereas the non-take-up group scored higher on executive functions for healthcare benefits. For welfare stigma, we observed no difference between the two groups for healthcare benefits, whereas the non-take-up group scored

higher on welfare stigma for child support benefits. For child support benefits, take-up correlates strongly with perceived eligibility (r_S = .72) and moderately with income (r_S = -.50), eligible amount (r_S = .43), and perceived need (r_S = .53) (Appendix, Table A2).

Main analyses

We applied maximum likelihood regression on the linear probability models represented by formula (1) and used robust standard errors[94]. We compared the base model – containing only the control variables – with the primary model – including independent and control variables. We standardized the numeric independent variables before conducting regression analyses to ease interpretation. We constructed Wald 95% confidence intervals for the regression coefficients to determine which variables contribute to predicting welfare take-up. Figure 2 graphically summarizes the results.

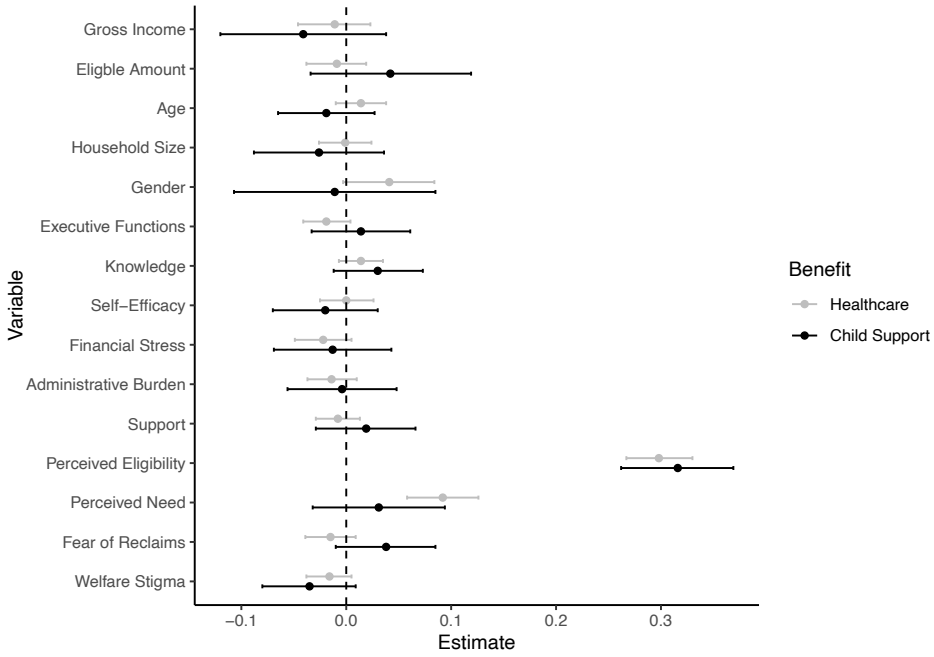

Figure 2. Results of model averaging for healthcare and child support benefits. Dots represent the parameter estimates; lines represent the 95% confidence intervals.

Table 2. Descriptives of the healthcare benefits subsample.

	Take-Up
Characteristic	**Overall, *N* = 715**
Gross Income	23,701.14 (7,967.16) 836.21 38,940.27
Eligible Amount	1,055 (569) 24 2,397
Age	60.04 (17.89) 20.00 93.00
Household Size	1.60 (0.86) 1.00 7.00
Gender: Male	358 (50%)
Gender: Female	357 (50%)
Self-Efficacy	5.54 (1.28) 1.00 7.00
Executive Functions	4.77 (1.11) 1.25 7.00
Knowledge	0.62 (0.72) 0.00 2.00
Financial Stress	2.64 (1.47) 1.00 7.00
Administrative Burden	3.23 (1.63) 1.00 7.00
Support	5.19 (1.44) 1.00 7.00
Perceived Eligibility	5.08 (2.45) 1.00 7.00
Perceived Need	4.41 (1.89) 1.00 7.00
Fear of Reclaims	3.49 (1.72) 1.00 7.00
Welfare Stigma	2.49 (1.18) 1.00 7.00

Mean (SD) Minimum Maximum; n (%). Gross Income and Eligible Amount represent yearly amounts. For the psychological variables, some items were recoded so that higher scores represent higher values.

Healthcare benefits

Results of the base model reveal that income and age explain the take-up of healthcare benefits (Table 4, left). As expected, lower-income households are more likely to take up healthcare benefits. Also, older respondents are more likely to take up healthcare benefits. The model fit increases compared to the null model with only an intercept term; however, it is low (Nagelkerke's[95] $\bar{R}^2 = .24$).

We averaged the regression results over all models with income, eligible amount, age, household size, and gender as control variables (Table 4, right). Results reveal that the take-up of healthcare benefits is significantly explained by perceived eligibility and perceived need after controlling for demographics. The model fit increase compared to the base model is high ($\bar{R}^2 = .89$).

Take-Up	
0, *N* = 220	**1, *N* = 495**
28,350.16 (6,972.92) 4,286.80 38,940.27	21,634.91 (7,502.39) 836.21 38,472.88
816 (601) 24 2,397	1,162 (521) 48 2,397
60.53 (16.44) 21.00 89.00	59.83 (18.50) 20.00 93.00
1.79 (0.88) 1.00 6.00	1.51 (0.84) 1.00 7.00
135 (61%)	223 (45%)
85 (39%)	272 (55%)
5.20 (1.34) 1.00 7.00	5.69 (1.22) 1.33 7.00
4.98 (1.00) 1.38 7.00	4.68 (1.15) 1.25 7.00
0.51 (0.69) 0.00 2.00	0.66 (0.73) 0.00 2.00
2.28 (1.17) 1.00 7.00	2.80 (1.56) 1.00 7.00
3.46 (1.55) 1.00 7.00	3.13 (1.65) 1.00 7.00
5.00 (1.52) 1.00 7.00	5.27 (1.41) 1.00 7.00
2.14 (1.78) 1.00 7.00	6.39 (1.31) 1.00 7.00
2.51 (1.53) 1.00 7.00	5.25 (1.35) 1.00 7.00
3.80 (1.75) 1.00 7.00	3.35 (1.70) 1.00 7.00
2.48 (1.19) 1.00 5.67	2.49 (1.18) 1.00 7.00

The association between take-up and perceived eligibility is the strongest: one standard deviation (*SD*) increase in perceived eligibility is associated with a .30 increase in take-up probability. One *SD* increase in perceived need is associated with a .09 increase in take-up. Contrary to our theoretical model, executive functions, knowledge, self-efficacy, administrative burden, support, fear of reclaims, financial stress, and welfare stigma do not significantly explain the take-up of healthcare benefits.

Table 3. Descriptives of the child support benefits subsample.

Characteristic	Take-Up Overall, *N* = 238[1]
Gross Income	48,086.26 (18,377.99) 7,391.11 86,039.82
Eligible Amount	4,847 (4,696) 37 32,570
Age	45.06 (7.45) 27.00 77.00
Household Size	4.06 (1.15) 2.00 8.00
Gender: Male	90 (38%)
Gender: Female	148 (62%)
Self-Efficacy	5.80 (1.11) 1.00 7.00
Executive Functions	4.93 (1.16) 1.12 7.00
Knowledge	0.73 (0.63) 0.00 2.00
Financial Stress	2.82 (1.42) 1.00 6.60
Administrative Burden	3.15 (1.58) 1.00 7.00
Support	5.33 (1.29) 1.00 7.00
Perceived Eligibility	4.66 (2.31) 1.00 7.00
Perceived Need	3.98 (1.73) 1.00 7.00
Fear of Reclaims	3.84 (1.64) 1.00 7.00
Welfare Stigma	2.39 (1.14) 1.00 5.67

Mean (SD) Minimum Maximum; n (%). Gross Income and Eligible Amount represent yearly amounts. For the psychological variables, some items were recoded so that higher scores represent higher values.

Child support benefits

For child support benefits, we observe a different pattern for take-up. Model averaging over all possible models with the control variables reveals that income explains take-up ($\bar{R}^2$ = .96, compared to the null model) (Table 5, left).

Results from model averaging over all variants of the primary model indicate that perceived eligibility significantly explains take-up for child support benefits after controlling for demographics ($\bar{R}^2$ = .98, compared to the base model) (Table 5, right). A one *SD* increase in perceived eligibility is associated with a .32 increase in take-up probability. In contrast with healthcare benefits, the take-up of child support benefits is not significantly explained by perceived need. Again, we find no support for executive functions, knowledge, self-efficacy, administrative burden, support, fear of reclaims, financial stress, and welfare stigma significantly explaining the take-up of healthcare benefits.

Take-Up	
0, *N* = 97[1]	**1, *N* = 141[1]**
59,068.96 (14,153.73) 19,943.90 86,039.82	40,530.79 (17,126.90) 7,391.11 79,523.15
2,817 (2,784) 37 11,223	6,243 (5,215) 127 32,570
46.14 (6.75) 27.00 72.00	44.32 (7.84) 27.00 77.00
4.32 (0.90) 2.00 7.00	3.89 (1.27) 2.00 8.00
47 (48%)	43 (30%)
50 (52%)	98 (70%)
5.76 (1.03) 3.67 7.00	5.83 (1.16) 1.00 7.00
4.95 (1.09) 2.62 7.00	4.91 (1.21) 1.12 7.00
0.65 (0.65) 0.00 2.00	0.79 (0.62) 0.00 2.00
2.43 (1.28) 1.00 6.60	3.09 (1.45) 1.00 6.60
3.29 (1.43) 1.00 5.67	3.05 (1.67) 1.00 7.00
5.22 (1.23) 2.00 7.00	5.40 (1.34) 1.00 7.00
2.60 (1.82) 1.00 7.00	6.07 (1.34) 1.00 7.00
2.86 (1.35) 1.00 6.50	4.74 (1.53) 1.00 7.00
3.62 (1.59) 1.00 6.67	4.00 (1.67) 1.00 7.00
2.45 (1.12) 1.00 5.33	2.35 (1.16) 1.00 5.67

Exploratory analyses

In addition to the confirmatory analysis in the previous section, we performed exploratory analyses to check the robustness of our findings to different modeling choices and to examine the interaction effects. The corresponding tables are in the Appendix. Since these analyses are exploratory, we are cautious about drawing conclusions[81]. Confirmatory studies should verify these findings.

When probabilities for the dependent variable are small, it is better to use a binomial instead of a linear probability model. In our case, take-up probabilities were .31 and .41, respectively. Indeed, using a binomial model does not change the results (Appendix, Table A3).

A combined model for the two benefits confirmed that perceived eligibility and perceived need explain take-up (Appendix, Table A4).

Table 4. Results of model averaging for take-up of healthcare benefits

Intercept
Gross Income
Eligible Amount
Age
Household Size
Gender
Executive Functions
Knowledge
Self-Efficacy
Administrative Burden
Support
Perceived Eligibility
Perceived Need
Fear of Reclaims
Financial Stress
Welfare Stigma

Table 5. Results of model averaging for take-up of child support benefits

Intercept
Gross Income
Eligible Amount
Age
Household Size
Gender
Executive Functions
Knowledge
Self-Efficacy
Administrative Burden
Support
Perceived Eligibility
Perceived Need
Fear of Reclaims
Financial Stress
Welfare Stigma

Base Model				Main Model			
Estimate	Adjusted SE	95% CI		Estimate	Adjusted SE	95% CI	
0.626	0.064	0.501	0.751	0.632	0.035	0.563	0.700
-0.173	0.027	-0.225	-0.121	-0.011	0.018	-0.046	0.023
0.040	0.021	-0.002	0.082	-0.009	0.015	-0.038	0.019
0.052	0.018	0.017	0.086	0.014	0.012	-0.010	0.038
-0.007	0.021	-0.048	0.034	-0.001	0.013	-0.026	0.024
0.064	0.034	-0.003	0.132	0.041	0.022	-0.003	0.084
				-0.019	0.011	-0.041	0.004
				0.014	0.011	-0.007	0.035
				0.000	0.013	-0.025	0.026
				-0.014	0.012	-0.037	0.010
				-0.008	0.011	-0.029	0.013
				0.298	0.016	0.267	0.330
				0.092	0.017	0.058	0.126
				-0.015	0.012	-0.039	0.009
				-0.022	0.014	-0.049	0.005
				-0.016	0.011	-0.038	0.005

Base Model				Main Model			
Estimate	Adjusted SE	95% CI		Estimate	Adjusted SE	95% CI	
0.540	0.094	0.357	0.723	0.610	0.082	0.450	0.771
-0.209	0.051	-0.308	-0.110	-0.041	0.040	-0.120	0.038
0.072	0.053	-0.031	0.176	0.042	0.039	-0.034	0.119
-0.035	0.029	-0.093	0.023	-0.019	0.023	-0.065	0.027
-0.053	0.044	-0.139	0.033	-0.026	0.032	-0.088	0.036
0.075	0.062	-0.047	0.196	-0.011	0.049	-0.107	0.085
				0.014	0.024	-0.033	0.061
				0.030	0.022	-0.012	0.073
				-0.020	0.026	-0.070	0.030
				-0.004	0.027	-0.056	0.048
				0.019	0.024	-0.029	0.066
				0.316	0.027	0.262	0.369
				0.031	0.032	-0.032	0.094
				0.038	0.024	-0.010	0.085
				-0.013	0.029	-0.069	0.043
				-0.035	0.023	-0.080	0.009

To test whether the relative contributions of promoting and inhibiting factors differ between low- and high-income households, we explored models including interactions between the independent variables and income (Appendix, Tables A5 and A6). Similarly, we explored interactions between the independent variables and knowledge (Appendix, Tables A7 and A8). We found that interactions do not aid in explaining take-up.

We explored which variables in our model explained perceived eligibility. For healthcare benefits, perceived eligibility was explained by executive functions, self-efficacy, perceived need, fear of reclaims, financial stress, and welfare stigma (Appendix, Table A9, and Figure A1). Perceived eligibility negatively relates to executive functions, financial stress, and welfare stigma. For self-efficacy, fear of reclaims, financial stress, and welfare stigma, the negative association is as expected. The same goes for the positive associations between self-efficacy and perceived need on one hand, and perceived eligibility on the other. The negative association between perceived eligibility and executive functions is counterintuitive and grants further research. Perhaps higher executive functions are indicative of being more self-sufficient. Households may perceive themselves to be ineligible because they think that benefits are meant for households that are not self-sufficient. The association estimates' confidence intervals for child support benefits included zero. We find no evidence for an association between perceived eligibility and the other independent variables for child support benefits. Figure A1 demonstrates that the confidence intervals are much wider for child support than for healthcare benefits. That may be due to the sample of eligible households for child support benefits being too small to detect differences.

DISCUSSION

The current study empirically tested an integrative model for take-up by households that includes the most relevant factors found in the literature on welfare participation across different research domains. Using Michie et al.'s[28] COM-B Model as a theoretical framework, we identify the relative contribution of various factors (related to capability, opportunity, and motivation) in promoting and inhibiting welfare take-up. We add to the existing take-up literature by testing these factors in conjunction.

We used a survey in a probability sample of the Dutch population to measure potential inhibitors of welfare participation in the Netherlands. We linked the outcomes to the (self-reported) economic data of the respondents. We controlled for demographic variables (income, eligible amount, age, household size, and gender).

For both benefit types, many eligible households perceive themselves as ineligible or uncertain about their eligibility: one in four households for healthcare benefits and almost half for child support benefits. In line with our theoretical model, we find a strong role for perceived eligibility in explaining take-up. When households perceive eligibility as higher, they are more likely to take up benefits. Put differently, when households incorrectly think they are ineligible or uncertain about their eligibility, they are less likely to take up benefits. The strong association between take-up and perceived eligibility remains after correcting for income and eligible amount. This makes it extra noteworthy because it implies that high-income and low-income households may forgo benefits because they incorrectly perceive to be ineligible.

For healthcare benefits, perceived need is an additional strong predictor of take-up. Households who need healthcare benefits to make ends meet or for whom healthcare benefits are more worthwhile are more likely to take up healthcare benefits. We do not find perceived need to be relevant in explaining take-up for child support benefits.

Exploratory analyses indicated that executive functions, perceived need, fear of reclaims, financial stress, and welfare stigma predict perceived eligibility for healthcare benefits. For all but executive functions, the estimates had the expected signs. We found no support for other variables in our model predicting perceived eligibility for child support benefits.

Our findings suggest that motivational factors have the largest direct associations with take-up. Motivations can often be understood in a cost-benefits frame[96], such that motivations can be assumed to be stronger when the costs of certain behaviors are lower or benefits are higher. Some elements of the factors we included can be conceived as more related to the costs of claiming (e.g., stigma), while others are more related to the benefits of claiming (e.g., perceived need). But there may also be other costs and benefits that one could consider. For future research, it may be helpful to supplement our framework to include and specify information costs (time, effort, and money needed to find information about eligibility, benefits, etc.) or supplement the data on benefits with the expected duration of the welfare.

Our findings contribute to identifying the main inhibitors of welfare participation and their relative contribution to non-take-up. To our knowledge, our study is the first to empirically examine the interplay of a comprehensive set of psychological factors in explaining welfare participation. Our findings suggest that motivational factors have the largest direct association with take-up.

The results of this study can aid policymakers in identifying which factors might best be targeted when designing interventions aimed at increasing take-up. Results suggest that targeting perceived eligibility may be the most promising avenue for increasing take-up. Households who incorrectly perceive themselves as ineligible or are uncertain about their eligibility are less likely to take up benefits. Because we found no support for general knowledge about benefits programs in explaining take-up, we propose a personalized approach to informing or reassuring households about their eligibility. The effectiveness of such interventions could be increased by combining them with interventions considering self-efficacy, fear of reclaims, and welfare stigma. Self-efficacy may be increased by training eligible households in applying and providing clear and understandable instructions. The fear of reclaims is often realistic; when households do not provide updates to the Tax Office when their circumstances change, this may result in a reclaim. Making the update process as easy as possible and reminding households to provide updates when their circumstances change may decrease the risk and fear of reclaims. It may be possible to reduce welfare stigma by pointing out to eligible households that many others in a similar situation claim benefits.

At the same time, we caution against overstating the immediate policy implications of our current findings. Indeed, it would be good to replicate our study findings with confirmatory analyses in searching for and developing effective interventions. In addition, we advise policymakers and scholars to set up experiments to test interventions' effectiveness jointly. Also, experiments may provide a viable route to establish causal relationships between the variables of interest. Our correlational cross-sectional study allowed us to examine relationships as they exist in the real world but do not provide a solid basis for causal inferences.

A particular strength of the current study is that it incorporated several potential promotors and inhibitors of take-up. This enabled us to determine the relative strength of these factors. Also, our approach reduced the risk of finding spurious associations compared to previous studies. Our study also has some limitations. First, it used self-reported data. Previous studies have indicated that self-reported take-up may contain errors[97,98]. Future studies could link potential thresholds for take-up with administrative records. Second, our study focused on thresholds and inhibitors of welfare participation at the household level. Future studies could examine how factors at the level of society, administration, and social networks interact with factors operating at the level of individual households. Third, our study did not consider the different stages of welfare participation. Future studies could examine the association between promotors and inhibitors of take-up in various stages of the welfare participation process (orientation, application, appeal, and update)[11].

Our study revealed the relative contribution of different factors to explaining take-up for the broad population of eligible households. Future studies could examine the lived experiences of financially vulnerable households with welfare participation. Such studies could deepen our understanding of promoting and inhibiting factors in take-up for groups that welfare programs aim to address par excellence. Also, such studies could reveal whether the relative contribution of factors affecting take-up differs for financially vulnerable households. Moreover, such studies could reveal aspects that have not been studied thus far.

We focused on healthcare and child support benefits in the Dutch context. It would be worthwhile to test our model in other contexts, that is, for additional benefit types and different jurisdictions.

In sum, our results show that elements of motivation, in particular perceived eligibility and need, explain participation in two Dutch national benefits programs. Exploratory results suggest that aspects of capability and motivation may explain perceived eligibility. Promotors and inhibitors of take-up may differ between welfare programs. Our findings imply that a personalized approach to informing households about their eligibility is a promising avenue for increasing take-up. Also, providing training and instruction, and reducing welfare stigma, may improve income security and reduce financial distress.

REFERENCES

1. Dubois, H. & Ludwinek, A. *Access to Social Benefits: Reducing Non-Take-Up*. (Publications Office of the European Commission, 2015).
2. Hernanz, V., Malherbet, F. & Pellizzari, M. Take-up of welfare benefits in OECD countries: a review of the evidence. *OECD Social, Employment and Migration Working Papers* **17** (2004).
3. Plueger, D. Earned Income Tax Credit participation rate for tax year 2005. *IRS Research Bulletin* 151–195 (2009).
4. Roosma, F., Oorschot, W. J. H. van & Gelissen, J. P. T. M. The Achilles' heel of welfare state legitimacy: perceptions of overuse and underuse of social benefits in Europe. *Journal of European Public Policy* **23**, 177–196 (2016).
5. Banerjee, A. V. & Duflo, E. *Poor economics: a radical rethinking of the way to fight global poverty*. (PublicAffairs, 2011).
6. Feagin, J. R. America's welfare stereotypes. *Social Science Quarterly* **52**, 921–933 (1972).
7. Odum, H. W. Newer ideals of public welfare. *The ANNALS of the American Academy of Political and Social Science* **105**, 1–6 (1923).
8. Craig, P. Costs and benefits: a review of research on take-up of income-related benefits. *Journal of Social Policy* **20**, 537–565 (1991).
9. Kerr, S. A. Deciding about supplementary pensions: a provisional model. *Journal of Social Policy* **11**, 505–517 (1982).
10. Kerr, S. A. *Differential take-up of supplementary pensions: An approach from cognitive psychology*. (The University of Edinburgh. Published Dissertation, 1982).
11. Van Oorschot, W. J. H. *Take it or leave it. A Study of Non-take-up of Social Security Benefits*. (Tilburg University Press, 1994).
12. Anderson, P. M. & Meyer, B. D. Unemployment insurance takeup rates and the after-tax value of benefits. *The Quarterly Journal of Economics* **112**, 913–937 (1997).
13. Currie, J. M. The take up of social benefits. *National Bureau of Economic Research Working Paper* **10488** (National Bureau of Economic Research, 2004).
14. Moffitt, R. An economic model of welfare stigma. *American Economic Review* **73**, 1023–1035 (1983).
15. Mood, C. Take-up down under: hits and misses of means-tested benefits in Australia. *European Sociological Review* **22**, 443–458 (2006).
16. Herd, P., DeLeire, T., Harvey, H. & Moynihan, D. P. Shifting administrative burden to the state: the case of Medicaid take-up. *Public Administration Review* **73**, S69–S81 (2013).
17. Moynihan, D. P., Herd, P. & Harvey, H. Administrative burden: learning, psychological, and compliance costs in citizen-state interactions. *Journal of Public Administration Research and Theory* **25**, 43–69 (2015).
18. Moynihan, D. P., Herd, P. & Ribgy, E. Policymaking by other means: Do states use administrative barriers to limit access to Medicaid? *Administration & Society* **48**, 497–524 (2016).
19. Baicker, K., Congdon, W. J. & Mullainathan, S. Health insurance coverage and take-up: lessons from behavioral economics. *The Milbank Quarterly* **90**, 107–134 (2012).
20. Christensen, J., Aarøe, L., Baekgaard, M., Herd, P. & Moynihan, D. P. Human capital and administrative burden: the role of cognitive resources in citizen-state interactions. *Public Administration Review* **80**, 127–136 (2020).

21. Bhargava, S. & Manoli, D. Psychological frictions and the incomplete take-up of social benefits: evidence from an IRS field experiment. *American Economic Review* **105**, 3489–3529 (2015).
22. Deshpande, M. & Li, Y. Who is screened out? Application costs and the targeting of disability programs. *American Economic Journal: Economic Policy* **11**, 213–48 (2019).
23. Domurat, R., Menashe, I. & Yin, W. The role of behavioral frictions in health insurance marketplace enrollment and risk: evidence from a field experiment. *American Economic Review* **111**, 1549–1574 (2021).
24. Dynarski, S., Libassi, C. J., Michelmore, K. & Owen, S. Closing the gap: the effect of reducing complexity and uncertainty in college pricing on the choices of low-income students. *American Economic Review* **111**, 1721–1756 (2021).
25. Finkelstein, A. & Notowidigdo, M. J. Take-Up and targeting: experimental evidence from SNAP. *The Quarterly Journal of Economics* 134, 1505–1556 (2019).
26. Sunstein, C. R. Sludge and ordeals. *Duke Law Journal* **68**, 1843 (2019).
27. Thaler, R. H. Nudge, not sludge. *Science* **361**, 431–431 (2018).
28. Michie, S., van Stralen, M. M. & West, R. The behavior change wheel: a new method for characterising and designing behavior change interventions. *Implementation Science* **6**, 42 (2011).
29. Arts, W. & Gelissen, J. Three worlds of welfare capitalism or more? A state-of-the-art report. *Journal of European Social Policy* **12**, 137–158 (2002).
30. Vrooman, J. C. *Rules of Relief: Institutions of Social Security, and Their Impact*. (SCP, 2009).
31. Hümbelin, O. Non-take-up of social assistance: regional differences and the role of social norms. *Swiss Journal of Sociology* **45**, 7–33 (2019).
32. Berkel, R. van. Making welfare conditional: a street-level perspective. *Social Policy & Administration* **54**, 191–204 (2020).
33. Peeters, R. & Campos, S. A. Taking the bite out of administrative burdens: How beneficiaries of a Mexican social program ease administrative burdens in street-level interactions. *Governance* **34**, 1001–1018 (2020).
34. Bertrand, M., Luttmer, E. F. P. & Mullainathan, S. Network effects and welfare cultures. *The Quarterly Journal of Economics* **115**, 1019–1055 (2000).
35. Markussen, S. & Røed, K. Social insurance networks. *Journal of Human Resources* **50**, 1081–1113 (2015).
36. Rege, M., Telle, K. & Votruba, M. Social interaction effects in disability pension participation: evidence from plant downsizing. *The Scandinavian Journal of Economics* **114**, 1208–1239 (2012).
37. Diamond, A. Executive functions. In Fiske, S. T. (ed.) *Annual Review of Psychology* **64**, 135–168 (Annual Reviews, 2013).
38. Finkelstein, A. & Notowidigdo, M. J. Take-up and targeting: experimental evidence from SNAP. *The Quarterly Journal of Economics* **134**, 1505–1556 (2019).
39. Linos, E., Prohofsky, A., Ramesh, A., Rothstein, J. & Unrath, M. Can nudges increase take-up of the EITC? Evidence from multiple field experiments. *American Economic Journal: Economic Policy* **14**, 432–52 (2022).
40. Bandura, A. Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review* **84**, 191–215 (1977).
41. Bandura, A. *Self-efficacy: the exercise of control*. (W.H. Freeman and Company, 1997).

42. Farrell, L., Fry, T. R. L. & Risse, L. The significance of financial self-efficacy in explaining women's personal finance behavior. *Journal of Economic Psychology* **54**, 85–99 (2016).
43. Lapp, W. M. Behavioral models for prosperity: a statistical assessment of savings and behavioral change. *EARN Research Brief*, *EARN Institute* (2010).
44. Madern, T. *Op Weg Naar Een Schuldenvrij Leven. Gezond Financieel Gedrag Noodzakelijk Om Financiële Problemen Te Voorkomen [A Road to a Debt-Free Life. Healthy Financial Behavior Is Necessary to Prevent Financial Problems]*. (Leiden University, 2015).
45. Van Dijk, W. W., Van der Werf, M. M. B. & Van Dillen, L. F. The Psychological Inventory of Financial Scarcity (PIFS): a psychometric evaluation. *Journal of Behavioral and Experimental Economics* **101**, 101939 (2022).
46. Drentea, P. & Reynolds, J. R. Where does debt fit in the stress process model? *Society and Mental Health* **5**, 16–32 (2015).
47. Johar, G., Meng, R. & Wilcox, K. Thinking about financial deprivation: rumination and decision making among the poor. *ACR North American Advances* **43**, 208–211 (2015).
48. Ruberton, P. M., Gladstone, J. & Lyubomirsky, S. How your bank balance buys happiness: the importance of 'cash on hand' to life satisfaction. *Emotion* **16**, 575–580 (2016).
49. Mullainathan, S. & Shafir, E. *Scarcity: Why Having Too Little Means So Much*. (Times Books, Macmillan and Henry Holt, 2013).
50. Adamkovič, M. & Martončik, M. A Review of consequences of poverty on economic decision-making: A hypothesized model of a cognitive mechanisms. *Frontiers in Psychology* **8** (2017).
51. De Bruijn, E.-J. & Antonides, G. Determinants of financial worry and rumination. *Journal of Economic Psychology* **76**, 102233 (2020).
52. Huijsmans, I. *et al*. A scarcity mindset alters neural processing underlying consumer decision making. *Proceedings of the National Academy of Sciences* **116**, 11699–11704 (2019).
53. Mani, A., Mullainathan, S., Shafir, E. & Zhao, J. Poverty impedes cognitive function. *Science* **341**, 976–980 (2013).
54. Hilbert, L. P., Noordewier, M. K. & Van Dijk, W. W. The prospective associations between financial scarcity and financial avoidance. *Journal of Economic Psychology* **88**, 102459 (2022).
55. Reijnders, M. A. W. *Non-take-up of Social Support and the Implications for Social Policies*. (Leiden University, 2020).
56. Fox, A. M., Stazyk, E. C. & Feng, W. Administrative easing: rule reduction and Medicaid enrollment. *Public Administration Review* **80**, 104–117 (2020).
57. Daponte, B. O., Sanders, S. & Taylor, L. Why do low-income households not use food stamps? Evidence from an experiment. *The Journal of Human Resources* **34**, 612–628 (1999).
58. Janssens, J. & Van Mechelen, N. To take or not to take? An overview of the factors contributing to the non-take-up of public provisions. *European Journal of Social Security* **24**, 95–116 (2022).
59. Ritchie, J. & Matthews, A. Take-up of rent allowances: An in depth study. *London: Social and Community Planning Research* (1982).
60. Dahan, M. & Nisan, U. The effect of benefits level on take-up rates: evidence from a natural experiment. *International Tax and Public Finance* **17**, 151–173 (2010).
61. Reeves, A. & Loopstra, R. 'Set up to fail'? How welfare conditionality undermines citizenship for vulnerable groups. *Social Policy and Society* **16**, 327–338 (2017).

62. Wright, S., Fletcher, D. R. & McNeill, J. Punitive benefit sanctions, welfare conditionality, and the social abuse of unemployed people in Britain: Transforming claimants into offenders? *Social Policy & Administration* **54**, 278–294 (2020).
63. Simonse, O., Vanderveen, G., Van Dijk, W. W., Van Dijk, E. & Van Dillen, L. F. Social security or insecurity? The experience of financially vulnerable households with welfare participation. *Social Policy & Administration* **57**, 255–271 (2022).
64. Horan, P. M. & Austin, P. L. The social bases of welfare stigma. *Social Problems* **21**, 648–657 (1974).
65. Currie, J. M. & Grogger, J. Explaining recent declines in Food Stamp Program participation. *Brookings-Wharton Papers on Urban Affairs* **2001**, 203–244 (2001).
66. Wildeboer Schut, J. M. & Hoff, S. *Geld op de plank [Money on the shelf]. Social and Cultural Planning Office of the Netherlands* (2009). Available at: *https://repository.scp.nl/bitstream/handle/publications/895/Geld_op_de_plank.pdf?sequence=1&isAllowed=y* (Accessed 5 September 2023).
67. Friedrichsen, J., König, T. & Schmacker, R. Social image concerns and welfare take-up. *Journal of Public Economics* **168**, 174–192 (2018).
68. Scherpenzeel, A. & Das, M. 'True' longitudinal and probability-based internet panels: evidence from the Netherlands. In *Das, M., P. Ester, and L. Kaczmirek (eds.), Social and Behavioral Research and the Internet: Advances in Applied Methods and Research Strategies. (pp. 77-104).* (Routledge, 2010).
69. Ministry of Internal Affairs. Wet op de zorgtoeslag [Healtchare allowance act]. *https://wetten.overheid.nl/BWBR0018451/2019-01-01* (2019).
70. Ministry of Internal Affairs. Wet op het kindgebonden budget [Child support allowance act]. *https://wetten.overheid.nl/BWBR0022751/2019-01-01* (2019).
71. Van der Elst, W. *et al*. The Amsterdam Executive Function Inventory (AEFI): psychometric properties and demographically corrected normative data for adolescents aged between 15 and 18 years. *Journal of Clinical and Experimental Neuropsychology* **34**, 160–171 (2012).
72. Pinel, E. C. Stigma consciousness: the psychological legacy of social stereotypes. *Journal of Personality and Social Psychology* **76**, 114–128 (1999).
73. Pinel, E. C., Warner, L. R. & Chua, P. Getting there is only half the battle: stigma consciousness and maintaining diversity in higher education. *Journal of Social Issues* **61**, 481–506 (2005).
74. Berkhout, E. E., Koot, P. M. & Bosch, N. M. Gebruik (en niet-gebruik) van toeslagen in Nederland [Take-up (and non-take-up) of benefits in the Netherlands]. *CPB Netherlands Bureau for Economic Policy Analysis* (2019). Available at: *https://www.cpb.nl/gebruik-en-niet-gebruik-van-toeslagen-in-nederland* (Accessed 7 July 2022).
75. Hellevik, O. Linear versus logistic regression when the dependent variable is a dichotomy. *Quality & Quantity* **43**, 59–74 (2009).
76. Akaike, H. Information theory and an extension of the maximum likelihood principle. *Second International Symposium on Information Theory* **44**, 267–81 (1973).
77. Brewer, M. J., Butler, A. & Cooksley, S. L. The relative performance of AIC, AICC and BIC in the presence of unobserved heterogeneity. *Methods in Ecology and Evolution* **7**, 679–692 (2016).
78. Bozdogan, H. Akaike's Information Criterion and recent developments in information complexity. *Journal of Mathematical Psychology* **44**, 62–91 (2000).
79. Burnham, K. P. & Anderson, D. R. Multimodel inference: understanding AIC and BIC in model selection. *Sociological Methods & Research* **33**, 261–304 (2004).

80. Hawkins, D. M. The problem of overfitting. *Journal of Chemical Information and Computer Sciences*. **44**, 1–12 (2004).
81. Anderson, D. R. *Model Based Inference in the Life Sciences: A Primer on Evidence* (Springer New York, 2008).
82. Myung, I. J. Tutorial on maximum likelihood estimation. *Journal of Mathematical Psychology* **47**, 90–100 (2003).
83. Smith, G. Step away from stepwise. *Journal of Big Data* **5**, 32 (2018).
84. Hoerl, A. E. & Kennard, R. W. Ridge regression: biased estimation for nonorthogonal problems. *Technometrics* **12**, 55–67 (1970).
85. Tibshirani, R. Regression shrinkage and selection via the lasso. *Journal of the Royal Statistical Society: Series B (Methodological)* **58**, 267–288 (1996).
86. Zou, H. & Hastie, T. Regularization and variable selection via the elastic net. *Journal of the Royal Statistical Society: Series B (Statistical Methodology)* **67**, 301–320 (2005).
87. Zucchini, W. An introduction to model selection. *Journal of Mathematical Psychology* **44**, 41–61 (2000).
88. Hoeting, J. A., Madigan, D., Raftery, A. E. & Volinsky, C. T. Bayesian model averaging: a tutorial. *Statistical Science* **14**, 382–401 (1999).
89. Lukacs, P. M., Burnham, K. P. & Anderson, D. R. Model selection bias and Freedman's paradox. *Annals of the Institute of Statistical Mathematics* **62**, 117–125 (2010).
90. Maes, H. H., Neale, M. C., Kirkpatrick, R. M. & Kendler, K. S. Using multimodel inference/model averaging to model causes of covariation between variables in twins. *Behavior Genetics* **51**, 82–96 (2021).
91. Allison, P. *Fixed effects regression models*. (Sage Publications, 2009).
92. D'Orazio, M. *univoutl: Detection of univariate outliers*. (Github, 2020).
93. Statistics Netherlands. Inkomen van huishoudens; inkomensklassen, huishoudenskenmerken [Income of households; income classes, household characteristics]. (2021).
94. King, G. & Roberts, M. E. How robust standard errors expose methodological problems they do not fix, and what to do about it. *Political Analysis* **23**, 159–179 (2015).
95. Nagelkerke, N. J. A note on a general definition of the coefficient of determination. *Biometrika* **78**, 691–692 (1991).
96. Fuchs, M., Gasior, K., Premrov, T., Hollan, K. & Scoppetta, A. Falling through the social safety net? Analysing non-take-up of minimum income benefit and monetary social assistance in Austria. *Social Policy & Administration* **54**, 827–843 (2020).
97. Bruckmeier, K., Hohmeyer, K. & Schwarz, S. Welfare receipt misreporting in survey data and its consequences for state dependence estimates: new insights from linked administrative and survey data. *Journal for Labour Market Research* **52**, 16 (2018).
98. Krafft, C., Davis, E. E. & Tout, K. The problem of measurement error in self-reported receipt of child-care subsidies: Evidence from Two States. *Social Service Review* **89**, 686–726 (2015).

CHAPTER 6. APPENDIX
HEALTHCARE BENEFITS AND CHILD SUPPORT BENEFITS

Overview

The Netherlands has a wide range of different arrangements for income support, including social provision, social security, and employee insurance schemes. Most schemes are based on national law; administration is delegated to local municipalities in many cases. Local municipalities often have supplemental income support programs to support the poorest families. This Appendix section an overview of the national benefits relevant for our study.

Healthcare benefits (HCB, *zorgtoeslag*) is a means-tested benefit that supports low-income families paying for their mandatory health insurance. Individuals aged 18 or more are eligible when they use health insurance in the Netherlands, pay the premium, and meet the income and asset thresholds (on household level). Those who are in the military service, incarcerated, and foreign students who do not work in the Netherlands are not eligible for HA. People living abroad who have mandatory health insurance in the Netherlands are eligible, as are EU-residents who receive a pension or allowance from the Netherlands in some cases.

Child support benefits (CSB, *kindgebonden budget*) cover costs such as children's clothing, food and school expenses for low-income households. The program is meant for those who have children under 18 (including step-children, foster children and adopted children), meeting income and asset criteria and receiving a general child allowance (GCA, *kinderbijslag*). The income threshold depends on the number of children and their ages. Parents that don't receive GCA for a child aged 16 or 17 who2 does not receive a student's grant, whom they support financially (meaning that they pay at least € 425 per quarter), are eligible. In case of a divorce, the parent who receives GCA also receives CB. In the case of two parents that both have children from a previous relationship for which they receive GCA, only one of the parents receives CSB. When a household receives one of the other three benefits, CSB is provided automatically in case of eligibility.

The "Allowance Scandal" (also known as the childcare allowance affair or allowances scandal) is a Dutch political affair resulting from unjustified fraud suspicions with childcare allowances and the strict recoveries in case of errors. From 2017, the affair received increasing attention. As of 2017, the affair received increasing attention. According to investigative committees, the working

methods of the Tax and Customs Administration were unlawful, discriminatory and improper, and there was institutional bias and violation of the fundamental principles of the rule of law. From 2004 to 2019, it was estimated that there were 26,000 parents and thus 70,000 children. They had made – often minor – mistakes or had been misled by childminder agencies and therefore had to repay the total childcare allowance. As a result, many victimized parents ended up in debt, which in some cases amounted to tens of thousands and even hundreds of thousands of euros. Victims had to deal with the large-scale disruption of their lives due to, among other things, loss of job or home, relocation of children or psychological problems. In 2019, State Secretary for Finance Menno Snel resigned. After a parliamentary interrogation committee investigation, former Minister of Social Affairs and Employment Lodewijk Asscher withdrew as Labour leader in January 2021. A few days later, the entire Rutte III cabinet resigned, and former State Secretary of Finance Eric Wiebes resigned as a minister with immediate effect.

Eligibility conditions for benefits in 2020

This section describes the main eligibility conditions for the two types of national benefits in scope for our study (first two subsections). The third subsection describes when people are "benefits partners."

Health care benefits

The main criteria for health care benefits in 2020 were:

- Minimum age 18 years;
- Using mandatory health insurance in the Netherlands and paying the premium;
- Living in the Netherlands with a Dutch nationality or a residence permit or resident of a Dutch municipality with a Nationality from an EU country, Liechtenstein, Norway, Iceland, or Switzerland;
- Maximum income (*toetsingsinkomen*) € 30.481 for individuals, or € 38.945 for benefits partners;
- Maximum capital € 116.613 for individuals, or € 147.459 for benefits partners (a definition of benefits partners is given below).

Special situations:

- People in the military service, in prison, conscientious objectors, and international students who do not work here are not eligible for health allowance.

- In some cases, people living in an EU country who receive a pension or allowance from the Netherlands are eligible for healthcare allowance.
- People living abroad who have mandatory health insurance in the Netherlands are eligible for healthcare allowance.
- Dutch residents who work abroad are generally not eligible for healthcare allowance because they don't have health insurance in the Netherlands.

Child support benefits

The main criteria for Child support benefits in 2020 were (Ministry of Internal Affairs, 2019b):

- People who have children under 18 years of age (including step-children, foster children, and adopted children);
- Receiving a general child allowance (*kinderbijslag*);
- Maximum income depends on household composition (see the calculation below). The threshold is 108% of the minimum wage. For 2020, this amounts to € 16.391. Above the threshold, eligible amounts are decreased.
- Dutch nationality or a valid residence permit;
- Maximum capital € 116.613 for individuals, or € 147.459 for benefits partners (a definition of benefits partners is given below).

Special situations:

- If income is above the threshold income, then the following calculation is applied to determine eligibility (if one's calculated benefit is positive, then one is eligible):
- The benefit amount is € 1,166 for one child, € 2,155 for two children, and € 2,447 for three or more children.
- The amount is increased by € 239 for each child between 12 and 16 years old
- The amount is increased by € 427 for each child between 16 and 17 years old
- The amount is increased by € 3,139 for single parents
- 6,75% of the difference between actual income and threshold income (*toetsinkomen)* is deducted from the benefit amount.
- People that don't receive a general child allowance (*kinderbijslag*) for a child aged 16 or 17 that does not receive a student's grant, and who support them financially (meaning that they pay at least € 425 per quarter) to support them, are eligible.
- In case of a divorce, only one parent receives child benefits (the parent who receives the general child allowance (*kinderbijslag*).
- In the case of two parents that both have children from a previous relationship for which they receive general child allowance, only one of the parents receives child benefits.

- People living outside of the Netherlands are eligible if they meet the other eligibility criteria.

Benefits partners

When people are benefits partners, total household income determines eligibility. People are benefits partners when they are married or have a registered partnership. Cohabitants are also benefits partners when:

- they were benefits partners in the previous year
- they have a formal cohabitation contract
- they are fiscal partners for the income tax
- they are partners in a pension arrangement
- they have a child together
- they have acknowledged someone else's child together
- they – or one of their cohabitants – have a child under the age of 18 (there are two exceptions, see below)
- they own a house together
- If you are benefits partners for part of a year, you do not need to sum your incomes and assets.

Exceptions

Cohabitants are not benefits partners if:

- one of the two cohabitants is the other's parent and younger than 27 years of age in the year of application OR
- there are three cohabitants older than 18

Eligible amounts

This section describes how the eligible amounts for the two types of national benefits in scope for our study are calculated.

Health care benefits

Eligible amounts for health care benefits are calculated as follows.

1. Determine the standard premium. For 2020, the standard premium is € 1.642 (€ 3.284 for benefits partners).
2. Calculate household income.
3. Calculate norm premium.
    a. For requestors without a partner: norm premium = 1,830% x € 21.431. + 13,550% (household income - € 21.431).
    b. For requestors with a partner: norm premium = 4,140% x € 21.431. + 13,550% (household income - € 21.431)

If the norm premium is negative, then use a norm premium of € 0.

4. Calculate eligible health care benefits. Health care benefit = standard premium -/- norm premium.
5. De maximum eligible health care benefit amount is achieved with a household income lower than € 21.431. For a requestor without a benefits partner, this amount is € 1.250. For a requestor with a benefits partner, the maximum amount is € 2.397.

Child support benefits

Eligible amounts for health care benefits are calculated as follows.

1. Determine the maximum benefit amount using the following table

Number of children	Single parent	Parent with benefit partner
1	€ 4.375	€ 1.185
2	€ 5.380	€ 2.190
3	€ 5.677	€ 2.487
>= 4 (per child)	€ 297	€ 297

2. Increase the maximum eligible amount. If there is a child of 12 years or older, then increase the maximum eligible amount with
   - € 243 for each child aged 12 - 15
   - € 434 for each child aged 16 - 17
3. Calculate household income. This is the income of the requestor and their benefits partner (if applicable)
4. Calculate decrease.
   - For single parents: decrease = 6,75% x (het toetsingsinkomen -/- €21.431)
   - For parents with a benefits partner: decrease = 6,75% x (household income -/- € 38.181)
5. Calculate benefit amount. As maximum eligible amount (step 1) + increase (step 2) -/- decrease (step 4).

SURVEY QUESTIONNAIRE

(Translated from Dutch)

Unless otherwise specified, the items were 7-scale-Likert items (1 = *fully disagree* ... 7 = *fully agree*).

Welfare take-up

Which of the following benefits did you receive in 2020?

1. Health care benefits
2. Child support benefits
3. Both
4. Neither

Executive functions

1. I am not able to focus on the same topic for an extended period *(v1a)*
2. I am easily distracted *(v1b)*
3. My thoughts easily wander *(v1c)*
4. I often react too fast. I often do or say something before it is my turn *(v1d)*
5. It is difficult for me to sit still *(v1e)*
6. It takes a lot of effort for me to remember things *(v1f)*
7. I often forget what I did yesterday *(v1g)*
8. I often lose things *(v1h)*
9. I am well-organized. For example, I am good at planning things that I need to do during a day *(v1i)*
10. It is easy for me to come up with a different solution if I get stuck when solving a problem *(v1j)*
11. I am full of new ideas *(v1k)*
12. I am curious. I want to know how things work *(v1l)*

Financial stress

1. I often don't have enough money *(v2a)*
2. I am constantly wondering whether I have enough money *(v2b)*
3. I worry about money a lot *(v2c)*
4. Because of my financial situation, I live from day to day *(v2d)*
5. I experience little control over my financial situation *(v2e)*

Perceived eligibility (1 = *certainly not* .. 7 = *certainly*).

1. I think that I was eligible for health care benefits in 2020 *(v3a)*
2. I think that my household was eligible for Child support benefits in 2020 *(v3b)*

Perceived need

1. Receiving child support benefits is worthwhile for me *(v4a)*
2. Receiving health care benefits is worthwhile for me *(v4b)*
3. Without health care benefits, it is difficult for me to make ends meet *(v4c)*
4. Without child support benefits, it is difficult for me to make ends meet *(v4d)*

Welfare stigma

1. People in my environment have a negative view of those who use welfare *(v4e)*
2. I am ashamed if I have to apply for health care benefits or Child support benefits *(v4f)*
3. There are negative prejudices about people who use Child support benefits or health care benefits *(v4g)*

Self-efficacy

1. I am confident that I can figure out if I am eligible for benefits *(v5a)*
2. If I want to, it is easy for me to apply for benefits *(v5b)*
3. Even if I try hard, I don't think I will succeed in applying for benefits *(v5c)*

Social support

1. I have people around me to turn to if I need help with welfare *(v5d)*
2. It is easy for me to find help applying for welfare if I cannot do it myself *(v5e)*
3. If I fail to apply for welfare, I know where to turn for help *(v5f)*

Administrative burden

1. It costs me a lot of time to figure out if I am eligible for welfare *(v6a)*
2. Applying for welfare is a lot of hassle *(v6b)*
3. It costs me a lot of effort to apply for benefits *(v6c)*

Fear of reclaims

1. I am concerned – when I receive benefits – that I have to repay them (partly) *(v6d)*
2. The thought that I will get a fine for receiving too much welfare makes me anxious *(v6d)*
3. I am worried that I have to repay benefits because of a mistake (v6e)

Eligibility

1. Did you or your partner receive a general child allowance in 2020? (*yes/no*)

Knowledge

1. Sem has just turned 18. She lives with her parents, Niels (46) and Fadime (45). She has a side job. She has health insurance, for which her parents pay the premium. Niels and Fadime's yearly income is € 60.000. Sem's yearly income is € 7.000. Is Sem eligible for healthcare allowance?
   a. No, because she lives with her parents
   b. No, because her parents' income is too high
   c. No, because her parents pay the health insurance premium
   d. Yes
   e. I don't know
2. Niels (46) and Fadime (45) own the house that they live in. Jolanda, Niels' sister, lives with them, together with her son Robin. Who is Niels' benefits partner?
   a. Only Fadime
   b. Only Jolande
   c. Fadime and Jolande
   d. Neither Fadime nor Jolande
   e. I don't know
3. Scott and Pamela live together. They receive Child support benefits for their daughter Kelly. Kelly will turn 16 next month. What does this mean for their Child support benefits?
   a. The amount stays the same.
   b. The amount increases.
   c. Their eligibility end
   d. I don't know.

CORRELATIONS

Healthcare Benefits

For healthcare benefits, Spearman's correlations between most of the variables of interest are weak, with a number of exceptions (Table 4).[d] Take-up of healthcare benefits correlates strongly with perceived eligibility (r_S = .76) and moderately with income (r_S = -.40) and perceived need (r_S = .64). Income correlates moderately with eligible amount (r_S = -.64), household size (r_S = .47), perceived eligibility (r_S = -.45), and perceived need (r_S = -.49). Eligible amount correlates moderately with perceived need (r_S = -.40). Administratrive burden correlates moderately with fear of reclaims (r_S = .51). Self-efficacy correlates moderately with administrative burden (r_S = -.56). Perceived eligibility correlates moderately with perceived need (r_S = .68). Perceived need correlates moderately with financial stress (r_S = .42). These correlations have the expected signs.

Table A1. Correlations for Healthcare Benefits

	2	3	4	5	6	7
1. Take-up	-.40	.31	.00	-.20	.15	-.12
2. Gross Income		-.64	.27	.47	-.29	.05
3. Eligible Amount			-.03	.09	-.01	-.03
4. Age				.09	-.19	.07
5. Household Size					-.26	.05
6. Gender (F)						.06
7. Executive Functions						
8. Knowledge						
9. Self-Efficacy						
1. Administrative Burden						
11. Support						
12. Perceived Eligibility						
13. Perceived Need						
14. Fear of Reclaims						
15. Financial Stress						
16. Welfare Stigma						

d We used Dancy and Reidy's (2007) characterizations: $r < .40$ = weak; $.40 < r < .69$ = moderate; $r > 0.69$ = strong.

Child Support Benefits

For child support benefits, correlations lead to similar findings (Table 5). Take-up correlates strongly with perceived need (r_S = .72) and moderately with income (r_S = -.50), eligible amount (r_S = .43), and administrative burden (r_S = .53). Income has a strong correlation with eligible amount (r_S = -.72) and a moderate correlation with perceived eligibility (r_S = -.50) and perceived need (r_S = -.57). Eligible amount has a moderate correlation with perceived eligibility (r_S = .43) and perceived need (r_S = .47). Self-efficacy correlates strongly with administrative burden (r_S = -.57). Administrative burden correlates strongly with fear of reclaims (r_S = .40). Perceived eligibility correlates moderately with perceived need (r_S = .62). There is a moderate correlation between perceived need and financial stress (r_S = .53). Again, correlation signs are as expected.

8	9	10	11	12	13	14	15	16
.10	.18	-.09	.08	.76	.64	-.12	.14	.00
-.08	-.05	-.01	-.03	-.45	-.49	.03	-.22	-.02
.05	.01	.01	-.02	.36	.40	-.05	.11	.05
-.23	-.17	.14	-.05	-.05	-.09	-.09	-.31	.06
.04	-.02	-.01	-.08	-.20	-.17	.05	-.03	.01
.09	.11	-.07	.13	.13	.12	.02	-.04	-.05
.11	.22	-.22	.09	-.09	-.13	-.22	-.34	-.07
	.26	-.21	.09	.10	.08	-.10	.00	-.07
		-.56	.34	.26	.17	-.32	-.13	-.23
			-.16	-.13	.01	.51	.21	.26
				.14	.07	-.19	-.15	-.19
					.68	-.16	.15	-.02
						.04	.42	.16
							.39	.22
								.25

Table A2. Correlations for Child Support Benefits

	2	3	4	5	6	7
1. Take-up	-.5	.43	-.12	-.19	.18	-.01
2. Gross Income		-.72	.13	.34	-.19	.06
3. Eligible Amount			-.04	.14	.19	-.03
4. Age				.01	-.22	.10
5. Household Size					-.17	.02
6. Gender (F)						.03
7. Executive Functions						
8. Knowledge						
9. Self-Efficacy						
1. Administrative Burden						
11. Support						
12. Perceived Eligiblity						
13. Perceived Need						
14. Fear of Reclaims						
15. Financial Stress						
16. Welfare Stigma						

8	9	10	11	12	13	14	15	16
.11	.06	-.08	.09	.72	.53	.12	.23	-.05
-.11	.04	.09	.08	-.50	-.57	-.12	-.39	-.11
.07	.01	-.08	.01	.43	.47	.09	.29	.02
-.01	-.12	.10	-.21	-.13	-.09	-.17	-.02	-.01
-.01	-.12	.05	.08	-.22	-.25	-.05	-.13	-.01
-.03	.15	-.11	.19	.21	.13	.08	.03	-.08
.08	.26	-.23	.25	-.06	-.13	-.27	-.34	-.27
	.09	-.02	.07	.05	.03	.03	.04	-.08
		-.57	.33	.17	.04	-.29	-.33	-.24
			-.27	-.12	-.04	.40	.21	.25
				.10	-.06	-.19	-.24	-.30
					.62	.02	.25	.00
						.22	.53	.14
							.37	.11
								.30

EXPLORATORY ANALYSES

Table A3: Robustness check: model averaging for a binomial model

	Healthcare benefits				Child support benefits			
	Estimate	Adjusted SE	95% CI		Estimate	Adjusted SE	95% CI	
Intercept	.611	.506	-.381	1.603	1.202	.797	-.359	2.764
Gross Income	-.169	.262	-.683	.345	.017	.434	-.833	.867
Eligible Amount	-.155	.211	-.568	.258	1.115	.582	-.025	2.256
Age	.202	.179	-.148	.552	-.287	.234	-.746	.172
Household Size	-.028	.176	-.372	.316	-.738	.419	-1.559	.083
Gender	.661	.331	.012	1.310	-.263	.465	-1.174	.649
Executive Functions	.266	.177	-.082	.613	-.220	.242	-.695	.255
Knowledge	.181	.168	-.148	.511	.303	.219	-.127	.733
Administrative Burden	-.229	.195	-.611	.152	.000	.305	-.597	.598
Support	-.080	.155	-.383	.223	.164	.265	-.356	.684
Perceived Eligibility	1.796	.191	1.421	2.171	2.067	.315	1.451	2.684
Perceived Need	1.165	.233	.709	1.621	.410	.316	-.209	1.028
Fear of Reclaims	-.330	.172	-.667	.006	.512	.280	-.038	1.061
Financial Stress	-.285	.212	-.699	.130	-.026	.280	-.575	.523
Welfare Stigma	-.266	.161	-.583	.050	-.321	.238	-.787	.146

Table A4: Explorative results of model averaging for a combined model for both benefits types

	Estimate	Adjusted SE	95% CI	
Intercept	.403	.048	.308	.498
Gross Income	-.085	.021	-.125	-.045
Eligible Amount	-.005	.016	-.036	.027
Age	.045	.011	.023	.068
Household Size	-.096	.020	-.135	-.056
Gender	.012	.021	-.030	.054
Executive Functions	.019	.011	-.002	.040
Knowledge	.011	.011	-.010	.032
Administrative Burden	-.011	.012	-.034	.013
Support	.008	.011	-.013	.028
Perceived Eligibility	.307	.013	.283	.332
Perceived Need	.030	.011	.009	.051
Fear of Reclaims	-.009	.012	-.032	.013
Financial Stress	-.013	.013	-.039	.013
Welfare Stigma	-.025	.011	-.046	-.003

Table A5: Explorative results of model averaging for take-up of health care benefits with interactions

	Estimate	Adjusted SE	95% CI	
Intercept	0.639	0.037	0.567	0.711
Perceived Eligibility	0.293	0.017	0.259	0.326
Perceived Need	0.095	0.017	0.061	0.129
Gender (F)	0.038	0.023	-0.006	0.082
Financial Stress	-0.027	0.014	-0.054	0.000
Income * Perceived Eligibility	0.023	0.014	-0.005	0.051
Income * Financial Stress	-0.022	0.012	-0.044	0.001
Executive Functions	0.020	0.011	-0.002	0.042
Income	-0.016	0.018	-0.052	0.020
Fear of Reclaims	-0.015	0.012	-0.039	0.009
Income * Support	-0.015	0.011	-0.036	0.006
Administrative Burden	-0.014	0.012	-0.037	0.010
Eligible Amount	-0.013	0.015	-0.043	0.016
Age	0.011	0.012	-0.013	0.035
Income * Perceived Need	0.010	0.018	-0.026	0.046
Support	-0.008	0.011	-0.029	0.013
Administrative Burden * Income	-0.004	0.011	-0.026	0.017
Household Size	0.003	0.013	-0.023	0.028

Table A6: Explorative results of model averaging for take-up of child support benefits with interactions for income

	Estimate	Adjusted SE	95% CI	
Intercept	0.605	0.082	0.444	0.766
Perceived Eligibility	0.313	0.030	0.255	0.371
Income	-0.060	0.036	-0.131	0.011
Eligible Amount	0.045	0.039	-0.031	0.121
Fear of Reclaims	0.038	0.024	-0.010	0.086
Perceived Need	0.037	0.033	-0.028	0.101
Income * Support	0.033	0.023	-0.011	0.078
Executive Functions	-0.024	0.023	-0.069	0.022
Support	0.024	0.024	-0.023	0.072
Income * Perceived Eligibility	0.022	0.027	-0.032	0.075
Income * Financial Stress	-0.019	0.024	-0.066	0.029
Age	-0.016	0.024	-0.062	0.030
Financial Stress	-0.015	0.028	-0.070	0.041
Household Size	-0.013	0.029	-0.071	0.044
Gender (F)	-0.006	0.049	-0.102	0.090
Administrative Burden	0.001	0.025	-0.049	0.051
Administrative Burden * Income	0.000	0.023	-0.045	0.044

Table A7: Explorative results of model averaging for take-up of healthcare benefits with interactions for knowledge

	Estimate	Adjusted SE	95% CI	
(Intercept)	0.631	0.035	0.562	0.700
Perceived Eligibility	0.300	0.016	0.269	0.332
Perceived Need	0.088	0.017	0.054	0.123
Gender	0.041	0.022	-0.003	0.085
Financial Stress	-0.023	0.014	-0.049	0.004
Executive Functions * Knowledge	0.022	0.011	0.000	0.044
Executive Functions	-0.020	0.011	-0.042	0.002
Fear * Knowledge	0.017	0.011	-0.005	0.039
Fear	-0.015	0.012	-0.039	0.010
Knowledge	0.014	0.011	-0.008	0.035
Age	0.014	0.012	-0.011	0.038
Administrative Burden	-0.013	0.012	-0.038	0.011
Gross Income	-0.011	0.018	-0.046	0.023
Knowledge * Financial Stresss	0.011	0.013	-0.014	0.036
Self-efficacy * Knowledge	-0.011	0.014	-0.038	0.016
Administrative Burden * Knowledge	-0.010	0.014	-0.037	0.017
Knowledge * Support	-0.009	0.011	-0.030	0.012
Eligible Amount	-0.008	0.015	-0.037	0.020
Support	-0.008	0.011	-0.029	0.013
Household Size	-0.002	0.013	-0.027	0.023
Knowledge * Perceived Eligibility	0.001	0.012	-0.023	0.025
Self-efficacy	0.001	0.013	-0.025	0.027
Knowledge * Perceived Need	0.000	0.013	-0.025	0.026

Table A8. Explorative results of model averaging for take-up of child support benefits with interactions for knowledge

	Estimate	Adjusted SE	95% CI	
(Intercept)	0.594	0.083	0.432	0.756
Perceived Eligibility	0.316	0.028	0.261	0.371
Gross Income	-0.053	0.037	-0.125	0.020
Eligible Amount	0.044	0.039	-0.033	0.122
Knowledge:Perceived Eligibility	-0.042	0.028	-0.097	0.013
Knowledge:Perceived Need	0.040	0.031	-0.021	0.101
Fear	0.038	0.025	-0.011	0.087
Perceived Need	0.036	0.032	-0.027	0.100
Knowledge	0.032	0.022	-0.011	0.075
Executive Functions * Knowledge	-0.031	0.023	-0.075	0.013
Knowledge * Support	-0.024	0.021	-0.064	0.017
Support	0.022	0.024	-0.025	0.069
Administrative Burden * Knowledge	0.022	0.023	-0.023	0.066
Self-efficacy	-0.021	0.027	-0.074	0.031
Executive Functions	0.018	0.024	-0.029	0.065
Fear * Knowledge	0.018	0.024	-0.028	0.065
Financial Stress	-0.018	0.029	-0.075	0.038
Household Size	-0.013	0.030	-0.071	0.045
Age	-0.013	0.024	-0.059	0.033
Administrative Burden	-0.010	0.027	-0.063	0.042
Self-efficacy * Knowledge	-0.009	0.026	-0.060	0.041
Knowledge * Financial Stress	0.007	0.028	-0.048	0.061
Gender	0.000	0.049	-0.096	0.097

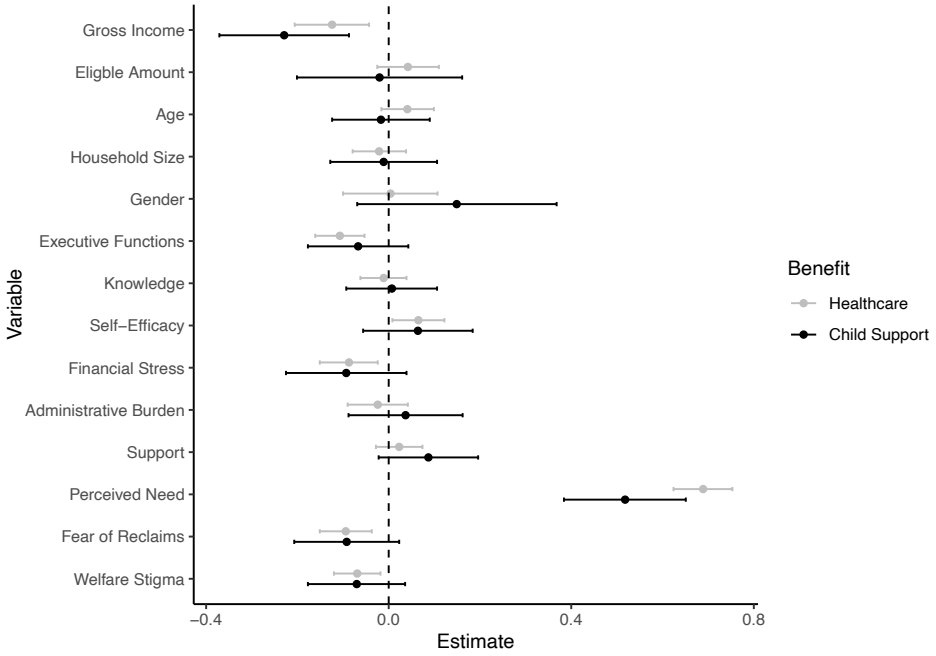

Figure A1. Results of model averaging for perceived eligibility of healthcare and child support benefits. Dots represent the parameter estimates; lines represent the corresponding 95% confidence intervals.

Table A9: Explorative results of model averaging for Perceived Eligibility

Intercept
Gross Income
Eligible Amount
Age
Household Size
Gender
Executive Functions
Knowledge
Self-Efficacy
Financial Stress
Administrative Burden
Support
Perceived Need
Fear of Reclaims
Welfare Stigma

Health care benefits				Child care benefits			
Estimate	Adjusted SE	95% CI		Estimate	Adjusted SE	95% CI	
-0.006	0.083	-0.168	0.156	-0.242	0.187	-0.609	0.125
-0.124	0.042	-0.206	-0.043	-0.229	0.072	-0.371	-0.087
0.042	0.035	-0.025	0.110	-0.020	0.092	-0.201	0.161
0.041	0.029	-0.016	0.099	-0.017	0.055	-0.124	0.090
-0.021	0.030	-0.079	0.038	-0.011	0.060	-0.128	0.106
0.004	0.053	-0.100	0.107	0.149	0.111	-0.069	0.368
-0.107	0.027	-0.161	-0.053	-0.067	0.056	-0.177	0.043
-0.011	0.026	-0.062	0.039	0.007	0.051	-0.093	0.106
0.065	0.029	-0.008	0.122	0.064	0.061	-0.056	0.184
-0.087	0.033	-0.151	-0.024	-0.093	0.067	-0.225	0.039
-0.024	0.034	-0.090	0.042	0.037	0.064	-0.088	0.162
0.023	0.026	-0.028	0.074	0.087	0.056	-0.022	0.196
0.689	0.033	-0.624	0.753	0.518	0.068	0.384	0.651
-0.094	0.029	-0.151	-0.037	-0.092	0.059	-0.207	0.023
-0.069	0.026	-0.120	-0.018	-0.070	0.054	-0.177	0.036