The Relationship Between Self-Control and Psychological Well-Being Among Highly Vulnerable Refugees: Evidence from Uganda

Nadya Hagen

June 2023

Abstract

Unconditional cash transfers (UCTs) have become an increasingly popular policy measure to alleviate poverty. Despite the increasing usage of UCTs, the effect of such programs tends to be rather short-lived. A plausible explanation for this are internal behavioral constraints such as self-control challenges, which are further reinforced by poverty and poor mental health. Research has found that self-control challenges may be alleviated or reduced through a soft commitment device (Soman and Cheema, 2011; Hoong 2021). To test whether a soft commitment device can improve the effectiveness of UCTs on psychological well-being, I evaluate an RCT among refugees in Uganda where the treatment offers cash transfer recipients the opportunity to receive a soft commitment device that invokes mental accounting to help overcome self-control challenges. I do this through a correlational analysis and an ITT analysis. I find that self-control is negatively correlated with depression and anxiety and positively correlated with optimism and the psychological well-being index. Additionally, the RCT improves the psychological well-being index and initial levels of self-control negatively influence the effect of the soft commitment device on aspirations.

1 Introduction

Uganda has recently been struggling with a large influx of refugees. In 2016-2018 the number of refugees in Uganda increased significantly due to conflict in its neighboring countries; South Sudan and the Democratic Republic of the Congo. Uganda is currently estimated to have over 1.5 million refugees (UNHCR, 2023) and due to this large number of refugees, Uganda has difficulties housing these refugees due to increasing costs and a decrease in available funding. These refugees are already living in poverty and thus to help alleviate poverty in Uganda, an intervention is necessary. There are many interventions possible to alleviate poverty and unconditional cash transfers have become an increasingly popular policy tool to do so.

Despite the many proponents of cash transfer programs, the effect of such programs tends to be generally short-lived (Altındağ and O'Connell, 2023) unless the cash transfers are of a substantial amount (Haushofer and Shapiro, 2016). A possible explanation for these results is that vulnerable refugees have problems with self-control when it comes to allocating cash transfers for different purposes throughout and after the duration of the intervention.

Self-control challenges are defined as the difficulty in regulating one's impulses, emotions, and actions to attain objectives in the long run (Duckworth et al., 2017). These challenges may present themselves as the inability to commit to pre-planned savings and investment plans. There is an abundance of research regarding self-control in the psychological domain (Duckworth, 2011; Moffitt et al., 2013) but there is little experimental and causal research about these self-control problems and their impacts on other aspects of life. In order to be able to analyze the effects of self-control, it is important to recognize that self-control is malleable (Piquero et al., 2010) and hence it is possible to implement interventions to reduce self-control challenges. Relating this to the problem of the short-lived effects of cash transfers, which may in part be due to self-control problems, addressing self-control may lead to an increase in the effectiveness of the cash transfer and potentially lengthen the effects beyond the duration of the cash transfer. It is possible to address self-control problems through a soft commitment device which makes the mental separation of the cash transfer more concrete. For example, a soft commitment device that allows recipients to physically separate the cash transfer to different "accounts" instead of solely having the mental separation. This mental separation of the cash transfer is known as mental accounting.

Mental accounts allow individuals to mentally label their incomes and budget their finances accordingly. It reduces the fungibility of money as there is less flexibility between moving allocated money from one account to another account despite the expenses being necessary. The fungibility of money is a property that states that any unit of money is substitutable for another. Mental accounting can be made more concrete and explicit through the use of labeled envelopes. The envelopes serve as a soft commitment device and allow

individuals to pre-assign their cash transfers into the envelopes. The act of budgeting draws attention to the expenses which they aim to control (Soman and Cheema, 2008). Previous studies made mental accounts explicit using one singular envelope (Soman and Cheema, 2011).

Besides the self-control challenges vulnerable refugees experience, it is also important to consider the impact of poverty on mental health. There is a significant negative correlation between income and poor mental health, specifically depression, anxiety, and suicide (Sareen et al., 2011; Iemmi et al., 2016). There is a lot of research regarding the psychological effects of living in poverty (Bernheim et al., 2015; Haushofer and Fehr, 2014), however, there is limited literature on the combination of these psychological effects and its impact on an individual's self-control in a financial context.

The various gaps in the literature motivate the research questions of this thesis. It motivates the search into how self-control affects psychological well-being and how the usage of a soft commitment for mental accounting aids in increasing self-control in vulnerable refugees. This thesis aims to address two questions: what is the relationship between self-control and various dimensions of psychological well-being, and does a soft commitment device influence various dimensions of psychological well-being with self-control as a moderating variable?

It is hypothesized that the correlations between self-control and the various dimensions of psychological well-being are statistically significant. There is a wide range of literature that explains how poverty has adverse effects on mental health (Sareen et al., 2011; Iemmi et al., 2016; Ridley et al., 2020) and that poverty can be further reinforced due to self-control problems (Kim and Park, 2015; Haushofer and Fehr 2014). This indirectly implies that self-control is correlated with psychological well-being variables. Furthermore, it is predicted that the effect of being assigned to the treatment condition with the four labeled envelopes will have a positive effect on self-control following the results of Heath and Soll (1996). The treatment is expected to have a positive effect on aspirations and optimism and a negative effect on depression and anxiety. If the labeled envelopes increase self-control, then they should be able to increase the psychological well-being indicators through self-control. However, it is important to consider that the intervention can improve psychological well-being through other channels as well. The four labeled envelopes may result in more savings and investments and hence higher income which can improve psychological well-being. In this thesis, I am however solely considering the moderating effect of self-control. The moderating effect of self-control is expected to be statistically significant for self-control and all psychological well-being indicators and that the effectiveness of the soft commitment device can in part be attributed to self-control.

To answer these questions and test the hypotheses, this thesis uses data from an ongoing RCT in North-Western Uganda that is being conducted by researchers at Tilburg University. The RCT attempts to increase the effectiveness of a 7-month long unconditional cash transfer program by the Danish Refugee

Council (DRC). To increase the self-reliance of the refugees, an intervention is necessary to ensure that the cash transfers are used for productive purposes such as education, health, and investments. The researchers at Tilburg University thus implemented the use of four different envelopes each labeled with one of these categories and one labeled as "other" as a soft commitment device. This intervention is implemented for a total of 861 households and out of these households, 569 households were randomly assigned to the treatment group and the remainder were assigned to the control group.

In this thesis, I measure the correlation between self-control and various dimensions of psychological well-being at both the baseline and the midline. The findings of the correlational analysis suggest that there is a statistically significant correlation between self-control, depression, anxiety, optimism, and the psychological well-being index at the midline. Self-control has a negative correlation with depression and anxiety and a positive correlation with optimism and the psychological well-being index. Although these correlations are statistically significant, they are too small and hence negligible (Hinkle et al., 2003). Since a correlation coefficient is unable to determine a directional relationship and establish causality, I estimate the Intention To Treat effects by means of a regression analysis.

I estimate the ITT effect of the soft commitment device on individual psychological well-being components such as aspirations, depression, anxiety, optimism, and an overall psychological well-being index. The findings of this thesis suggest that being assigned to the soft commitment device increases the psychological well-being index which is an extension of the research by Christian et al (2021). Additionally, self-control is found to be a partial moderating variable in the effectiveness of the soft commitment device on psychological well-being measures.

In Section 2 I will provide an extensive overview of the current literature, where there may be gaps, and how this thesis will contribute to these gaps. In Section 3, the methodology of the thesis will be discussed and explained. In Section 4 the data used will be described and I will provide some descriptive analytics. Section 5 will contain the results followed by a discussion of the results in Section 6. Then this thesis will be concluded in Section 7.

2 Context and Literature Review

2.1 Context

2.1.1 The Uganda Cash Consortium

This thesis is based on an ongoing RCT in North-Western Uganda. The researchers at Tilburg University are collaborating with the Danish Refugee Council (DRC) to increase the effectiveness of the unconditional cash transfers of the Uganda Cash Consortium. They want to increase the self-reliance of the vulnerable refugees after having received the cash transfers. To achieve this, the researchers implemented the use of four different labeled envelopes with the labels: "education", "health", "investments", and "other". The intervention randomly selected 861 households to be included in the RCT. There are a total of three conditions; cash only, mental accounting, and mental accounting with default. The cash-only condition is the control group who just received the UCT in one large unlabeled envelope. The mental accounting condition is the treatment 1 group who are offered the chance to receive the four labeled envelopes. The mental accounting with the default condition is the treatment 2 group which is similar to treatment 1. They differ in that those in treatment 2 are shown a recommended allocation of the cash transfer across the four envelopes, this recommendation is based on the minimum expenditure basket. For both treatment 1 and treatment 2 the households have the option to decline the use of envelopes. If the households decline they are considered to be non-compliers. At the baseline 288 households were randomly assigned to treatment 1, 281 households were randomly assigned to treatment 2 and the remaining 292 households belonged to the control group.

2.2 Literature Review

2.2.1 The Psychological Impact of Poverty

It has long been known that poverty leads to external constraints – both monetary and in the labor market. Most research has focused on these constraints, however, there has recently been an increase in the emerging literature on the internal constraints of poverty such as myopia, lack of willpower, and a lack of aspirations.

When an individual is living in poverty, they may experience various psychological impacts such as additional stress, anxiety, and depression. Many studies have found a correlation between low income, and a high rate of poor psychological well-being (Sareen et al., 2011; Iemmi et al., 2016). Poor psychological well-being increases the chances of developing mental health problems. Mental health is defined as a state of well-being in which the individual realizes his or her abilities, can cope with the normal stresses of life, can work productively and fruitfully, and can make a contribution to his or her community (World Health Organization, 2023). Income is however not the only factor that drives the increasing mental ill-health of

poor individuals.

According to Ridley et al. (2020), the causal relationship between poverty and mental ill-health is bi-directional. There are various mechanisms attributed to poverty that lead to mental ill-health such as worries and uncertainty, environmental factors, early-life conditions, trauma, violence, and crime. Mani et al. (2013) found that poverty has a negative impact on cognitive function as individuals are worried about their financial problems which reduces mental resources for other concerns. There are also mechanisms of mental-ill health that may lead to and further perpetuate poverty such as reduced cognitive function, labor supply and productivity, and the stigma surrounding mental health (Ridley et al., 2020). The effect of poor mental health further perpetuating poverty is one of the mechanisms through which a behavioral poverty trap may exist (Alloush, 2018; Maravilla and Tan, 2021). A behavioral poverty trap is defined as a situation where an agent's talents are diminished due to poverty, which in turn perpetuates poverty further (Laajaj, 2017).

Another mechanism is aspirations failure. Dalton et al. (2016) model the two-way relationship between aspirations failure and behavioral poverty traps. Aspiration failure is defined as "the failure to aspire to one's own potential." Poverty may amplify the effects of behavioral biases which then lead to aspirations failure and a perpetuating poverty trap. External and internal constraints are however not independent of each other. External constraints make the poor more vulnerable and they may be more easily affected by behavioral biases. The external constraints make the poor more likely to experience aspiration failure. The model by Dalton et al. (2016) predicts that the lack of aspirations is caused by poverty rather than a cause of poverty. Hence, through a poverty alleviation policy such as unconditional cash transfers, poor individuals may be able to increase their aspirations (Dalton et al., 2016) and such a policy can also have positive mental health effects (Angeles et al., 2019).

2.2.2 Unconditional Cash Transfers in Developing Countries

Unconditional cash transfers (UCTs) have become an increasingly popular social protection strategy, especially in countries where conditionality is difficult to establish and maintain (Loeser et al., 2021). In comparison to conditional cash transfers (CCTs), UCTs are generally cheaper to implement due to the lack of monitoring. Additionally, there are psychological benefits that can be derived from using a UCT as it allows recipients to spend their cash transfer however they may deem necessary (Haushofer and Shapiro, 2016). Furthermore, if it is expected that the conditionality of a cash transfer will result in high non-compliance, then UCTs are generally preferred over CCTs (Baird et al., 2011).

Policymakers often express concern regarding the unconditionality of UCTs and that because there is no set category on which the money must be spent, the transfer might be spent on temptation goods.

However, research by Evans and Popova (2017) has shown that both UCTs and CCTs result in a decreased total expenditure on temptation goods. Hence, the concern about inappropriate usage of cash transfers is unfounded. These results are further supported by Haushofer and Shapiro (2016).

Haushofer and Shapiro (2016) conducted an RCT to investigate the effect of UCTs on poor households in rural Kenya with a focus on their impact on economic outcomes and psychological well-being. They find that an exogenous reduction in poverty by means of a UCT results in significant reductions in depression, stress, and worries. These results show that positive income shocks can improve an individual's mental health which supports the hypothesis that poverty alleviation has benefits for an individual's psychological well-being. Angeles et al. (2019) find similar results and show that UCTs are effective in improving the mental health of youth in Malawi and that cash transfers may help to break the perpetuating poverty trap. However, Altındağ and O'Connell (2023) find that the effect of the UCTs tends to be short-lived unless the cash transfers are of a substantial amount (Haushofer and Shapiro, 2016). These findings may be explained in part by the fact that vulnerable refugees struggle to exercise self-control when deciding how to use cash transfers both during and after the intervention.

Despite many studies providing significant results, and evidence that UCTs may improve mental health, albeit short-term, Jacob et al. (2022) fail to find any effects of a cash transfer on mental health. It must however be noted that in their study they only provide a one-time unconditional cash transfer as opposed to multiple cash transfers over an extended period. This was however not the only UCT study that failed to find any effect. A study by Hjelm et al. (2017) was unable to find a relationship between two UCT programs in Zambia and their effect on perceived stress. Hence further research is necessary to understand what causes these null effects and whether it may be in part due to the lack of self-control of individuals. This is important to consider as recipients may have spent their money on non-productive activities or used the money not for its intended purpose.

2.2.3 Self-Control

Self-control challenges refer to the difficulty in regulating one's impulses, emotions, and actions to attain objectives in the long run (Duckworth et al., 2017). It is a problem that can affect many aspects of an individual's life. Self-control challenges may be more persistent due to external stresses, especially for vulnerable refugees. For example, depression has a negative effect on self-control, and hence poor psychological well-being may exacerbate self-control problems (Kim and Park, 2015).

Bernheim et al. (2015) developed a model in which they study an intertemporal allocation problem where the individual faces a credit constraint. The results of their model point to how poverty may persist as poor individuals have lower levels of self-control and hence further reinforcing poverty. This further reinforcement

6

of poverty disables poor individuals to become self-reliant. Bernheim et al. (2015) define self-control to be the use of an internal psychological mechanism, specifically focusing on the self-imposed use of conditional punishments and rewards in order to incentivize themselves. They find that poverty undermines the ability to have self-control through conditional punishments and rewards while being wealthy has the opposite effect and increases self-control. Since their study is mainly focused on the internal psychological mechanism, there is potential for further research and expansion of the behavioral economics of poverty literature.

Haushofer and Fehr (2014), have shown that poverty makes individuals more likely to experience the self-control and willpower-reducing effects of decision-making. The constant stress that poor individuals are under may be emotionally draining and leads to lower amounts of self-control when it comes to decision-making. Haushofer and Fehr (2014) have found evidence that poverty causes stress which in turn may lead to short-sighted and risk-averse decision-making. This means that individuals are more likely to spend their money on goods and services which give them instant gratification rather than investing in their future which is the definition of a self-control challenge. This short-sightedness and the more risk-averse decision-making could be explained by the favoring of habitual behaviors instead of engaging in goal-directed behavior.

Research by Heath and Soll (1996) has shown that it is possible to increase self-control through an external mechanism such as budgeting. They mention that if self-control is a problem, people should create somewhat inflexible budgets in order to encourage them to maintain their initial set budgets. Combining this effect with the findings of Haushofer and Fehr (2014), individuals who lack self-control and spend their money on goods and services that give them instant gratification may be able to increase their self-control through inflexible budgets or a soft commitment device.

There is research by Hoong (2021) regarding the effect of soft commitment devices on self-control in the context of smartphone usage. They found that the soft commitment device positively affects self-control and that participants used their phones less. This implies that soft commitment devices are effective in increasing self-control.

Considering the research of Heath and Soll (1996) and Hoong (2021), it is possible that an opt-in soft commitment device that makes mental accounting more concrete and inflexible can influence psychological well-being in individuals by increasing self-control.

2.2.4   Mental Accounting

Mental accounting is the process of categorizing financial resources into separate mental accounts based on various criteria. As an example, one may divide their finances into different accounts, each having their purpose, one account for entertainment, another account for utilities, etc. Thaler (1985) used mental accounts to further develop the theory of consumer choice by making it more in line with actual consumer

behavior and found that the usage of mental accounts can reduce the fungibility of money which resolves the conflict of spending alignment between the farsighted 'planner' and the myopic 'doer' (Thaler and Shefrin, 1981). The fungibility of money is a property that states that any unit of money is substitutable for another. This is further supported by the research of Cheema and Soman (2008).

Cheema and Soman (2008) found that mentally labeling money changes our spending behavior and influences consumer choice. Consumer choice has one central assumption which is the fungibility of money. When using mental accounts, the fungibility of money is reduced as we sort the money into separate accounts. If we want to use money that has been allocated in an account for education purposes to spend it on entertainment it is possible but it is cognitively more costly. Mental accounts help to ensure that the budgeted money or planned expense is aligned with actual expenses as any deviations from the planning may elicit guilt if the budget is spent on other goods than initially intended for (Soman and Cheema, 2011).

Although mental accounts are seemingly concrete, there is a concept known as malleable mental accounting which was introduced by Cheema and Soman (2006). Malleable mental accounting occurs when there are ambiguous expenses that cannot be classified into one single account. This malleability allows people to manipulate the assigned budgets for the accounts and hence justify expenses on temptation goods. Thus, there needs to be a mechanism that prevents this malleability and clarifies all expenses into various categories. This can be done by means of a soft-commitment device.

2.3   Contributions of this Thesis

First, this thesis contributes to the literature on the effect of self-control on psychological well-being in a humanitarian context. Since this thesis is concerned with vulnerable refugees who live in poverty, it combines the adverse effects of poverty on mental ill-health (Sareen et al., 2011; Iemmi et al., 2016; Ridley et al., 2020; Mani et al., 2013) together with the impact of low self-control due to poverty (Haushofer and Fehr, 2014). There has been research regarding the mediating effect of self-control on psychological well-being (Kim and Park, 2015).

Second, this thesis contributes to the literature on how UCTs can improve psychological well-being in developing countries (Haushofer and Shapiro, 2016) and humanitarian contexts (Altındağ and O'Connell, 2023). The current existing literature does however not account for self-control problems and how it may influence the effectiveness of the UCT and its further impact on psychological well-being. Thus, this thesis will contribute to the literature as it focuses on the relationship between self-control and psychological well-being after the vulnerable refugees have received their cash transfers.

Third, this thesis contributes to the literature on mental accounting. Existing literature has considered

the effectiveness of mental accounts in a developing country and the effect of soft commitment devices on self-control by aligning planned expenses with actual expenses (Cheema and Soman, 2011). This thesis considers how the reinforcement of mental accounts through an opt-in soft commitment device can affect psychological well-being through self-control in a UCT in a humanitarian context.

Last, this thesis contributes to research on how self-control influences the effectiveness of soft commitment devices and how this affects the psychological well-being of individuals. There has been research regarding the mediating effect of self-control on psychological well-being (Kim and Park, 2015) but none yet on how this influences the effectiveness of soft commitment devices.

3 Method

In this thesis, I will conduct two types of data analysis. The first is a correlational data analysis between self-control and its correlation with various dimensions of psychological well-being both at the baseline and the midline. This correlational analysis is described in Section 3.1 and the results are presented in Section 5.1. The second data analysis method is the estimation of the Intention To Treat (ITT) effect for being assigned to the treatment of four envelopes and its effect on various dimensions of psychological well-being. This analysis is described in Section 3.2 and the results are presented in Section 5.2.

3.1 Correlational Analysis

At the baseline, the correlation between self-control, aspirations, and depression will be measured and at the midline, I will also additionally measure the correlation between these variables and optimism and anxiety. This will be done by means of Pearson's correlation coefficient or commonly known as Pearson's R (Pearson and Filon, 1896). This analysis will indicate whether there is a linear relationship between two variables of interest and indicate the degree of correlation and direction of correlation. Then the statistical significance can be inferred through the p-value, if the p-value is less than or equal to the significance level, then the correlation is said to be statistically significant. The equation for Pearson's R is as follows:

$$r_{xy} = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2}\sqrt{\sum_{i=1}^{n}(y_i - \bar{y})^2}} \tag{1}$$

The correlation coefficient can be obtained by summing the product of the difference between an individual observation point and its mean, this constitutes the numerator. Then the denominator is the square root of the product of the sum of squared differences. The correlation coefficient has a range between $-1 \leq r \leq +1$. A correlation coefficient of -1 indicates a perfectly negative relationship whereas +1 indicates a perfectly positive relationship between the two variables. A correlation coefficient equal to zero indicates that there exists no linear relationship between the two variables but it may be possible that there is a non-linear relationship between them. Table 1 presents the rules of thumb for interpretation of the correlation coefficient size taken from Hinkle, Wiersma and Jurs (2003).

Although Pearson's R can give some insight into the relationships between two variables, it has some limitations. One of the main limitations is that it only correctly determines linear relationships between variables. Furthermore, Pearson's R does not distinguish between independent and dependent variables.

Table 1: Interpretation of Correlation Sizes

Size of Correlation	Interpretation
.90 to 1.00 (-.90 to -1.00)	Very high positive (negative) correlation
.70 to .90 (-.70 to -.90)	High positive (negative) correlation
.50 to .70 (-.50 to -.70)	Moderate positive (negative) correlation
.30 to .50 (-.30 to -.50)	Low positive (negative) correlation
.00 to .30 (.00 to -.30)	Negligible correlation

Table adapted from: Hinkle et al. (2003). *Applied Statistics for the Behavioral Sciences* (5th ed.)

Hence the correlation which may be found does not establish a causal relationship and the direction of the causation cannot be inferred. In order to obtain more valuable conclusions, I will conduct a causational analysis.

3.2 Intention-To-Treat

In order to establish a causal relationship of being assigned a treatment and the outcome variable, I estimate the Intention To Treat (ITT) effect or also commonly known as the Average Treatment Effect (ATE) of the intervention. This will be done by means of an OLS regression where the data from the midline observation will be used as the outcome variable of interest. Hence, I define the following regression equation:

$$Y_{i1} = \beta_0 + \beta_1 Envelopes + \delta_e + \gamma_z + X_i + Y_{i0} + Early_i + \varepsilon_i \tag{2}$$

where Y_{i1} is the outcome variable that I want to measure for the household i at time $t = 1$ which is at the time of the midline survey. The outcome variables which I want to measure are: self-control, aspirations, depression, optimism, anxiety and the psychological well-being index. Treatment is a dummy variable equal to 1 if household i belongs to the treatment condition of the four envelopes and 0 if household i belongs to the control with only one unlabeled envelope. δ_e are the fixed effects for the enumerator which are used to capture any bias in response resulting from the person who surveyed the households. γ_z are the fixed effects for the settlement zone that the household lives in. X_h is a vector of the baseline covariates which consist of the stratified variables as indicated in Table 2. Y_{i0} is the baseline value of the outcome variable if this is available for the variable of interest. For this, I use an ANCOVA specification in the regression to increase the statistical power of the regression (McKenzie, 2012). $Early_i$ is a dummy variable indicating when the households received their cash transfer in order to capture time-specific effects, if the household received their cash transfer in August 2022, this will be equal to 1. If they received their cash transfer in September 2022, this will be equal to 0. The error term ε_h is heteroskedasticity robust and not clustered.

In order to observe the moderating effect of self-control at the baseline on the relationship between the soft

commitment device and various psychological well-being indicators, I estimate the heterogeneous treatment effects. I do this by means of the following OLS regression:

$$Y_{i1} = \beta_0 + \beta_1 Envelopes + \beta_2 SC + \beta_3 Envelopes \times SC + \delta_e + \gamma_z + X_i + Early_i + Y_{i0} + \epsilon_i \qquad (3)$$

where Y_{i1} is the psychological well-being indicator that I want to measure for household i at the midline. SC is the standardized self-control score at the baseline acting as a moderating variable between the soft commitment device and the psychological well-being indicator. Self-control is interacted with the treatment of the four envelopes to indicate how the baseline level of self-control influences how effective the treatment is. The error term ϵ_h is heteroskedasticity robust.

When using ITT estimates, there is a potential threat of differential attrition. Differential attrition occurs when participants, or in this case households, drop out of the study at different rates across treatments. This leads to an imbalance between the control and treatment group sizes and hence, ITT estimates are unable to accurately capture the effect of the treatment. I conduct an analysis in order to control for differential attrition and to ensure that the ITT estimates that I obtain are accurate. However, it is not expected to be a matter of concern due to the nature of the UCT intervention. The amount of the cash transfer is a large enough amount of the recipient's monthly household income. This would incentivize them to keep receiving the cash transfers. Another reason why attrition should not be a concern is that the households in the sample are vulnerable refugees coming from South Sudan and the Democratic Republic of Congo. The situation in these countries has not improved since the migration of these refugees and hence there should not be a concern of the households returning to their country of origin. The detailed method and analysis can be found in Appendix A.

4 Data Description and Descriptive Analysis

The data that I use in this research has been taken from an ongoing RCT that is currently being conducted by Researchers at Tilburg University. As it is still an ongoing RCT at the time of writing this thesis, only the baseline and midline observations will be used for the data analysis. In Appendix B you can find a description of the data cleaning process along with the data itself. The dataset consists of demographic, household characteristics, treatment assignment, cash transfer amount, and several outcome variables, for 861 households at the baseline and 810 households at the midline. At the baseline, 292 households were assigned to the control condition which only received cash without any interventions. Then the remaining 569 households were either assigned to mental accounting with or without a default. However, for this thesis, I combined mental accounting with and without default into one treatment group that got assigned to the mental accounting condition with 4 envelopes. The treatment was however optional and 93.15% opted-in for the treatment.

The six main dependent variables used in this analysis are the self-control score, aspirations score, depression measured by the CES-D scale, optimism score, anxiety score, and the psychological well-being index which consists of both depression and anxiety. I use the binary indicator of depression instead of the CES-D score as the balance between treatments is better for Depressed than for CES-D. It also allows for the interpretation of a percentage change in depression rather than a change in the CES-D score as the interpretation of the score is less clear. A detailed description and measurement of these variables can be found in Appendix C.

Table 2 presents the data's descriptive statistics at the baseline. Columns (1) and (2) provide the means and standard deviations for the control and treatment group characteristics respectively along with the number of households for each characteristic. Column (3) shows the p-values of a two-sample T-test to test for equality of means across the control and treatment groups. Almost all of the p-values are large enough which implies that the existing differences between the treatment and control group are not statistically significant except for CES-D and Depressed which is measured using CES-D. This is in line with expectations as even with perfect randomization, 1 in 10 outcome variables will be statistically significant at the 10% level of significance and 1 in 20 outcome variables will be statistically significant at the 5% level. Overall, the randomization of the treatment assignment was successful and resulted in a mostly balanced sample across both the control and treatment groups.

According to Columns (1) and (2) of Table 2, the average age of the household head is just above 38 years old and over 90% of households have a female head of household. The average household size is 6 persons per household and the average year of arrival is 2018, coming from South Sudan. The average CES-Depression

Table 2: Balance Table

Variable	N	(1) **Control** Mean/(SD)	N	(2) **Treatment** Mean/(SD)	(3) P-value
Stratified Variables					
Age of HH Head	292	38.897 (14.593)	569	38.074 (13.642)	0.413
HH Head is Female	292	0.911 (0.285)	569	0.914 (0.281)	0.886
HH size	292	6.240 (2.788)	569	6.165 (2.746)	0.708
Arrival Year	292	2018.240 (3.675)	569	2018.221 (3.780)	0.946
Country of Origin: South Sudan	292	0.901 (0.300)	569	0.905 (0.293)	0.836
DRC Vulnerability Score	119	60.057 (4.888)	223	59.460 (4.649)	0.268
Protection Referrals Share	292	0.592 (0.492)	569	0.608 (0.489)	0.658
Non-Stratified Variables					
CESD	292	27.877 (10.653)	569	26.274 (10.817)	0.039^{**}
Depressed	292	0.880 (0.325)	569	0.837 (0.370)	0.089^{*}
Self-Control	292	36.760 (6.009)	569	36.914 (5.870)	0.718
Aspirations	292	0.028 (1.194)	569	0.016 (0.459)	0.839

Notes: Columns (1) and (2) show the average values (and the standard deviation) of the respondents in the control and treatment groups at the baseline. 342 households had Vulnerability Scores from DRC. ***, **, and * represent significance at the 1, 5, and 10% level, respectively.

score is above the cutoff score of 16 (American Psychological Association, 2011) which indicates risk for clinical depression, indicating that most of these refugees are experiencing depression, 88% and 83.7% for the control and treatment group respectively.

The attrition analysis has found that the study has a low attrition rate which is not due to the assignment of treatment, hence implying that there is no threat of differential attrition and that attrition bias is unlikely to have occurred in this study. These numbers are presented in Table 7 and Table 8 of Appendix A.

5 Results

5.1 Correlational Analysis

Table 3 presents the correlations between self-control, aspirations and depression at the baseline. Only one significant negative correlation was found between self-control and the indicator of depression ($r = -.112, p < 0.05$), but despite the statistical significance, the correlation size is too small to be considered (Hinkle et al., 2003). The correlation between self-control and aspirations is observed to be positive which implies that if an individual has more self-control, they are more likely to aspire and if individuals have more aspirations then they have more self-control. However, this correlation is very small and not significant and is thus negligible. The same holds for the correlation between aspirations and depression, the correlation is positive but negligible.

Table 3: Baseline Correlations

	Self-Control	Depressed
Self-Control	1	-0.112^{**}
Depressed	-0.112^{**}	1

Notes: This table presents the Pearson's correlation coefficients at the baseline based on Equation (1). ***, **, and * represent significance at the 1, 5, and 10% level, respectively.

Table 4 presents the correlations between self-control, aspirations, depression, optimism and anxiety at the midline. Almost all the correlations are significant at the 1% level except for the correlations related to aspirations. It is of interest to look at the correlation between self-control and the various psychological well-being indicators – depression, optimism and anxiety.

Table 4: Midline Correlations

	Self-Control	Aspirations	Depressed	Optimism	Anxiety	Psych. WB
Self-Control	1	0.005	-0.160^{***}	0.111^{***}	-0.124^{***}	0.165^{***}
Aspirations	0.005	1	-0.011	0.044	0.048	-0.026
Depressed	-0.160^{***}	-0.011	1	-0.246^{***}	0.457^{***}	-0.643^{***}
Optimism	0.111^{***}	0.044	-0.246^{***}	1	-0.189^{***}	0.232^{***}
Anxiety	-0.124^{***}	0.048	0.457^{***}	-0.189^{***}	1	-0.900^{***}
Psych. WB	-0.165^{***}	0.026	0.643^{***}	-0.232^{***}	0.900^{***}	1

Self-control is negatively correlated with depression ($r = -.160$, $p < 0.01$). Compared to the baseline correlation of these two variables, the correlation has become stronger and slightly more negative but the correlation coefficient remains too small to not be seen as negligible. Self-control is positively correlated

to optimism ($r = .111, p < 0.01$) however, the number is negligible as the correlation coefficient is too small. There exists a negative correlation between self-control and anxiety ($r = -.124, p < 0.01$) but this correlation size is negligible as well. Lastly, there is a positive correlation between self-control and the psychological well-being index ($r = -.165, p < 0.01$). This is however to be expected as this index consists of depression and anxiety which both have a significant correlation with self control. However, the magnitude of the correlation is negligible. Furthermore, it is observed that correlations which were not significant or statistically significant at a lower level have increased their level of significance. Despite this, Pearson's R only allows for correlational analysis and hence it is not possible to deduce the direction of the observed relationships and infer causality. Section 5.2 uses ITT estimates to establish a causal relationship between these variables.

5.2 ITT Effects

Table 5 presents the Intention to Treat (ITT) effect of the intervention. The estimates are interpreted as the effect of providing the opportunity for households to adopt a soft commitment device. The estimates aim to see whether the treatment assignment influences self-control and various dimensions of psychological well-being.

Table 5: ITT Estimates

	(1)	(2)	(3)	(4)	(5)	(6)
	Self-Control	Aspirations	Depressed	Optimism	Anxiety	PWB
Envelopes	0.031	-0.068	-0.028	0.026	-0.372	0.097*
	(0.049)	(0.074)	(0.028)	(0.190)	(0.231)	(0.052)
Self-Control (Baseline)	0.019					
	(0.024)					
Aspirations (Baseline)		-0.000				
		(0.000)				
Depressed (Baseline)			0.066			
			(0.038)			
Observations	810	810	810	810	810	810
Adjusted R^2	0.582	0.060	0.249	0.312	0.403	0.421
Control Mean	39.015	0.017	0.796	13.451	7.284	0.049

Notes: The table presents the regression results of equation (2). The control variables which have been used in this regression are: age of household head, dummy for having a female household head, household size, dummy for the country of origin being South Sudan, dummy for when households received their cash transfer and a dummy for whether the household is a protection referral. ***, **, and * represent significance at the 1, 5, and 10% level, respectively.

The treatment assignment does not increase self-control presented in Column 1 nor does it improve the outcomes of the psychological well-being indicators in Columns 2 to 5. Column 6 indicates that being assigned to the envelopes increases the psychological well-being index by 0.097 standard deviations. This coefficient is statistically significant at the 10% level. Rows 2, 3, and 4 display the coefficients of each dependent variable's value at the baseline; this demonstrates how the dependent variable at the baseline is related with the midline value of the variable. However, only in Column 3, is the baseline variable Depressed is statistically significant at 10% significance but this is to be expected. For self-control this may be due to malleability (Piquero et al., 2019) and hence the baseline values are not 'sticky' and do not affect the self-control at the midline. While I do not find an average effect of the soft commitment device on self-control and various psychological well-being outcomes, I consider the moderating effect of self-control in this relationship.

Table 6 presents the heterogeneous treatment effects of the intervention considering self-control as a moderating variable from Equation (3). These ITT estimates aim to see whether self-control acts as a moderating variable and influences the effectiveness of the soft commitment device on self-control and psychological well-

being.

Table 6: ITT Estimates with Moderating Effect

	(1) Self-Control	(2) Aspirations	(3) Depressed	(4) Optimism	(5) Anxiety	(6) PWB
Envelopes	0.030	−0.071	−0.027	0.027	−0.365	0.095*
	(0.049)	(0.074)	(0.028)	(0.190)	(0.231)	(0.052)
Self-Control × Envelopes	−0.057	−0.141*	−0.024	−0.116	0.090	0.001
	(0.050)	(0.074)	(0.028)	(0.192)	(0.234)	(0.053)
Self-Control (Baseline)	0.056	0.116*	−0.014	0.047	−0.134	0.025
	(0.040)	(0.060)	(0.023)	(0.155)	(0.188)	(0.042)
Aspirations (Baseline)		−0.000				
		(0.000)				
Depressed (Baseline)			0.057			
			(0.038)			
Observations	810	810	810	810	810	810
Adjusted R^2	0.583	0.063	0.253	0.311	0.402	0.421
Control Mean	39.015	0.017	0.796	13.451	7.284	

Notes: The table presents the regression results of equation (3). The control variables which have been used in this regression are: age of household head, dummy for having a female household head, household size, dummy for the country of origin being South Sudan, dummy for when households received their cash transfer and a dummy for whether the household is a protection referral. ***, **, and * represent significance at the 1, 5, and 10% level, respectively.

There are no statistically significant effects of self-control as a moderating variable on the effect of the treatment assignment on self-control, depression, optimism, anxiety and psychological well-being. However, there is a statistically significant effect on the outcome variable of aspirations. Column 1 indicates that in the control group, if self-control is increased by one standard deviation, aspirations increase by 0.016 standard deviations which is statistically significant at the 10% level. If a household is assigned into treatment, a one standard deviation increase in self-control results in a -0.014 standard deviation decrease of aspirations as compared to the control group which is statistically significant at the 10% level. A one standard deviation increase in self-control for the treatment condition results in a 0.002 standard deviation increase of aspirations when compared to households with the mean level of self-control in the treatment group. In Column 6 there is a statistically significant effect of the treatment assignment on the psychological well-being index. The treatment group experiences a 0.095 standard deviation increase of psychological well-being compared to the control group. This result is statistically significant at the 10% level. However, I fail to find a statistically significant effect of self-control as a moderating variable. These results are further discussed in Section 6.

6 Conclusion

6.1 Discussion of Results

The correlational analysis of self-control and the various psychological well-being outcomes were non-conclusive at the baseline. One statistically significant negative correlation was found between self control and depression however, the correlation size is too small to be recognized. The correlational analysis of these variables at the midline showed that there is a statistically significant correlation between self-control and the various psychological well-being outcomes, except for aspirations but the correlation effect sizes are negligible. These correlations may however imply that due to the soft commitment device, the variables become more dependent on each other. However, since I also include the control group in the correlational analysis, it may also be due to the cash transfers. In order to test whether the observed relationship is due to the soft commitment device, I obtained the ITT estimates of the effect of the treatment on self-control and the psychological well-being outcomes and also considered self-control as a moderating variable.

The ITT estimates of the treatment effect on self-control do not indicate a statistically significant relationship between the two variables. This result is not in line with the research of Hoong (2021). The discrepancy can be explained by two different factors. Either the intervention was not powerful enough to influence self-control or it could be due to the lack of panel data. Self-control is a behavior that is changed over time and duration of the intervention data may be too short in order to observe this change in habit (Haushofer & Fehr, 2014). The assignment of treatment positively influenced the psychological well-being index whereas the effect of the individual psychological well-being variables observed no effect of the treatment. This may in part be due to the fact that the effects of depression and anxiety are too small to observe a relationship. In order to understand the mechanism through which psychological well-being increases can only be known when accounting for self-control as a moderating variable.

In this thesis, I find that self-control is a statistically significant moderating variable solely for aspirations. People with higher levels of self-control in the treatment condition experience a negative effect of the soft commitment device on aspirations compared to individuals with the same level of self-control in the control group. This is a new finding as no literature finds this negative relationship of the soft commitment device on aspirations based on the level of self-control that individuals have. Generally, the literature looks at how the soft commitment device can increase self-control (Hoong, 2021) but since this relationship is not present in this thesis, it is important to recognize that since it is a soft commitment, self-control itself still plays an important role in the effectiveness of the soft commitment. It is a two-way relationship. The takeup of the treatment may be related to the initial level of self-control that the recipients have. However, the self-control score is not significantly correlated with the takeup (r = 0.021, p = 0.549) and hence this is not

an issue. It may be that individuals with these varying levels of self-control do not adhere to treatment or that for their level of self-control the soft commitment device is simply not effective. Individuals with levels of self-control that are too low may need a hard commitment device. This will be discussed in Section 6.3. As for individuals with high levels of self-control, they may not adhere to treatment as they do not deem the soft commitment necessary. Thus, it may be that the soft commitment device's effectiveness is dependent on the level of self-control that an individual has at the beginning of the intervention.

As for the possible limitations of the methodology of this study, the findings of this study are not expected to suffer from experimenter demand effects which is generally a concern with self-reported survey measures. It is not a concern as the researchers at Tilburg University have accounted for this possibility. Additionally, since this thesis is based on an RCT, there is no possibility of self-selection issues as the treatment condition was randomized across households.

Despite this, the identification strategy may suffer from omitted variable bias. The soft commitment device may improve psychological well-being through other channels. The use of the four labeled envelopes may result in more savings and investments and hence higher income which is also able to improve psychological well-being.

6.2   Applicability and Limitations

The context of this thesis is quite specific to the vulnerable refugee situation in Uganda. The results of this thesis are thus applicable primarily to similar contexts in which individuals living in poverty have been subject to migration due to external circumstances beyond their control. This is a limitation of this thesis as the results are not widely generalizable across all situations. However, this thesis has produced a new finding that the self-control levels of individuals can influence the effectiveness of soft commitment devices and their outcomes on psychological well-being.

Additionally, this thesis only measures the ITT effect and does not consider the Treatment of the Treated (TOT) estimates. The ITT estimates only address the causal effect of being assigned to the treatment whereas TOT looks at the causal effect of adhering to the treatment which may provide more accurate estimates of the effect of the treatment on self-control and psychological well-being.

Furthermore, this thesis has provided suggestive evidence that a soft commitment device can improve various dimensions of psychological well-being with self-control as a moderating variable. However, it may be that the sample is not large enough to observe a statistically significant treatment effect and thus the power of this study is limited. Hence, a larger sample size may be necessary to observe concrete evidence of the effects of a soft commitment device on psychological well-being.

Additionally, heterogeneity analysis could be done to observe the effect of the sex and the age of the head of household on the outcome variables. In many of the regression analyses these variables had significant outcomes. There is reason to believe that these variables may influence self-control as research has shown that men and women tend to have different behaviors when it comes to spending habits and handling cash (Bastagli et al., 2019).

6.3   Policy Implications

As self-control plays a role in the effectiveness of the soft commitment device, policymakers may want to consider hard commitment devices. If individuals inherently have self-control problems, then the soft commitment device may not be enough for them to adhere to the treatment, further reinforcing self-control problems. These self-control problems then do not allow the vulnerable refugees to become self-reliant and they are stuck in a perpetuating poverty trap which would only worsen psychological well-being outcomes. A hard commitment device may therefore be more effective in improving self-control as it enforces the treatment. It may also be possible that individuals with higher levels of self-control get assigned to the soft commitment device whereas individuals with lower levels of self-control get assigned to the hard commitment device in order to improve the outcomes of the unconditional cash transfer.

7 Conclusion

Unconditional cash transfers (UCT) are one of the many approaches that can be used to alleviate poverty. There are many proponents of UCTs and research has shown that they are effective in reducing poverty. However, these effects tend to be short-lived which can in part be attributed to the lack of self-control. As self-control is malleable (Piquero et al., 2009), self-control can be influenced by the means of a soft commitment device. However, the effectiveness of the soft-commitment device itself is influenced by the level of self-control. This thesis provides empirical evidence to show the relationship between self-control and the various dimensions of psychological well-being. Additionally, the thesis provides causal evidence on the effect of self-control on the effectiveness of the soft commitment device.

In this thesis, I evaluated a UCT program in Uganda that was randomized at the implementation of a soft commitment device. I analyze the intention to treat (ITT) estimates of the RCT. The results show that the soft commitment device improved the psychological well-being index. Furthermore, I also find that self-control affects the effectiveness of the soft commitment device in reducing aspirations. However, I fail to find an effect of the intervention on self-control and individual psychological well-being measures such as depression, optimism, and anxiety.

The results of this thesis provide suggestive evidence that soft commitment devices may in part improve psychological well-being and that initial levels of self-control may be able to increase the effectiveness of the soft commitment devices. However, it seems that physical cash transfers are primarily able to address external constraints but not internal constraints. In order to address these internal constraints, harder commitment devices may be needed. Hence, there is still fruitful ground for further research, and more research is needed to observe the effect of the soft commitment device on internal constraints.

8 References

Alloush, M. (2018). Income, Psychological Well-being, and the Dynamics of Poverty: Evidence from South Africa. (274223).

Altındağ, O., & O'Connell, S. D. (2023). The short-lived effects of unconditional cash transfers to refugees. Journal of Development Economics, 160(C).

American Psychological Association. (2011). Center for Epidemiological Studies-Depression.

Angeles, G., de Hoop, J., Handa, S., Kilburn, K., Milazzo, A., & Peterman, A. (2019). Government of Malawi's unconditional cash transfer improves youth mental health. Social Science & Medicine, 225(C), 108–119.

Baird, S., McIntosh, C., & Özler, B. (2011). Cash or Condition? Evidence from a Cash Transfer Experiment. The Quarterly Journal of Economics, 126(4), 1709–1753.

Bastagli, F., Hagen-Zanker, J., Harman, L., Barca, V., Sturge, G., & Schmidt, T. (2019). The Impact of Cash Transfers: A Review of the Evidence from Low- and Middle-income Countries. Journal of Social Policy, 48(3), 569–594.

Bernard, T. and Taffesse, A. (2014). Aspirations: An approach to measurement with validation using Ethiopian data. Journal of African Economies, 23:189–224

Bernheim, B., Ray, D., & Yeltekin, S. (01 2015). Poverty and Self-Control. Econometrica, 83.

Cheema, A., & Soman, D. (2006). Malleable Mental Accounting: The Effect of Flexibility on the Justification of Attractive Spending and Consumption Decisions. Journal of Consumer Psychology, 16(1), 33–44.

Cheema, A., & Soman, D. (2008). The Effect of Partitions on Controlling Consumption. Journal of Marketing Research, 45(6), 665–675.

Christian, C., Hensel, L., & Roth, C. (2019). Income Shocks and Suicides: Causal Evidence From Indonesia. The Review of Economics and Statistics, 101(5), 905–920.

Dalton, P. S., Ghosal, S., & Mani, A. (2016). Poverty and Aspirations Failure. The Economic Journal, 126(590), 165–188.

Duckworth, A. (2011). The significance of self-control. Proceedings of the National Academy of Sciences of the United States of America, 108, 2639–2640.

Duckworth, A. L., & Seligman, M. E. P. (2017). The Science and Practice of Self-Control. Perspectives on Psychological Science, 12(5), 715–718.

Evans, D., & Popova, A. (2017). Cash Transfers and Temptation Goods. Economic Development and Cultural Change, 65(2), 189–221.

Haushofer, J., & Fehr, E. (2014). On the psychology of poverty. Science, 344(6186), 862–867.

Haushofer, J., & Shapiro, J. (2016). The Short-term Impact of Unconditional Cash Transfers to the Poor: Experimental Evidence from Kenya*. The Quarterly Journal of Economics, 131(4), 1973–2042.

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

Hinkle, D. E., Wiersma, W., & Jurs, S. G. (2003). Applied Statistics for the behavioral sciences. Houghton Mifflin Company.

Hjelm, L., Handa, S., de Hoop, J., & Palermo, T. (2017). Poverty and perceived stress: Evidence from two unconditional cash transfer programs in Zambia. Social Science & Medicine, 177, 110–117.

Hoong, R. (2021). Self control and smartphone use: An experimental study of soft commitment devices. European Economic Review, 140, 103924.

Iemmi, V., Bantjes, J., Coast, E., Channer, K., Leone, T., McDaid, D., Lund, C. (2016). Suicide and poverty in low-income and middle-income countries: a systematic review. The Lancet Psychiatry, 3, 774–783.

Jacob, B., Pilkauskas, N., Rhodes, E., Richard, K., & Shaefer, H. L. (2022). The COVID-19 cash transfer study II: The hardship and mental health impacts of an unconditional cash transfer to low-income individuals. National Tax Journal, 75(3), 597–625.

Kim, J. H., & Park, E. Y. (2015). Mediating effect of self-control in relation to depression, stress, and activities of daily living in community residents with stroke. Journal of Physical Therapy Science, 27, 2585–2589.

Laajaj, R. (2017). Endogenous time horizon and behavioral poverty trap: Theory and evidence from Mozambique. Journal of Development Economics, 127, 187–208.

Loeser, J., Özler, B., & Premand, P. (2021). What have we learned about cash transfers? World Bank Blogs.

Mani, A., Mullainathan, S., Shafir, E., & Zhao, J. (2013). Poverty Impedes Cognitive Function. Science, 341(6149), 976–980.

Maravilla, N., & Tan, M. J. (2021). Philippine Mental Health Act: Just an Act? A Call to Look Into the Bi-directionality of Mental Health and Economy. Frontiers in Psychology, 12, 706483.

McKenzie, D. (2012). Beyond baseline and follow-up: The case for more T in experiments. Journal of Development Economics, 99(2), 210–221.

Moffitt, T., Poulton, R., & Caspi, A. (2013). Lifelong Impact of Early Self-Control. American Scientist, 101, 352.

Orkin, K., Garlick, R., Mahmud, M., Sedlmayr, R., Haushofer, J., and Dercon, S. (2023). Aspiring to a better future: Can a simple psychological intervention reduce poverty? Working Paper.

Pearson, K., & Filon, L. N. G. (1898). Mathematical contributions to the theory of evolution. iv. on the probable errors of frequency constants and on the influence of random selection on variation and

Correlation. Proceedings of the Royal Society of London, 62(379–387), 173–176.

Piquero, A. R., Jennings, W. G., & Farrington, D. P. (2010). On the Malleability of Self-Control: Theoretical and Policy Implications Regarding a General Theory of Crime. Justice Quarterly, 27(6), 803–834.

Ridley, M., Rao, G., Schilbach, F., & Patel, V. (2020). Poverty, depression, and anxiety: Causal evidence and mechanisms. Science, 370(6522).

Sareen, J., Afifi, T., Mcmillan, K., & Asmundson, G. (2011). Relationship Between Household Income and Mental Disorders Findings From a Population-Based Longitudinal Study. Archives of General Psychiatry, 68, 419–427.

Soman, D., & Cheema, A. (2011). Earmarking and Partitioning: Increasing Saving by Low-Income Households. Journal of Marketing Research, 48(SPL), S14–S22.

Tangney, J. P., Baumeister, R. F., and Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. Journal of Personality, 72(2):271–324

Thaler, R. (1985). Mental Accounting and Consumer Choice. Marketing Science, 4(3), 199–214.

Thaler, R. H., & Shefrin, H. M. (1981). An Economic Theory of Self-Control. Journal of Political Economy, 89(2), 392–406.

UNHCR. (2023). Uganda comprehensive – Refugee Response Portal.

World Health Organization. (2022). Mental Health.

Appendix A - Differential Attrition Analysis

In order to control for differential attrition and to ensure that the ITT estimates which I obtain are accurate, I use an OLS regression and check whether the differential attrition has occurred by means of the following regression:

$$Attrition_{it} = \beta_0 + \beta_1 Envelopes + \gamma_z + X_i + Early_i + \varepsilon_i \tag{4}$$

where $Attrition_{it}$ is an indicator which will be equal to 1 if attrition has occurred and 0 otherwise. With this regression I test that if attrition has occurred, whether it can be attributed to being assigned into the treatment or not, hence testing whether $\beta_1 = 0$ or not. If the value of β_1 is statistically significant then it would imply that a household not participating in the midline survey is due to the assignment of treatment.

Table 7 presents the attrition rates for the full sample, the control group and the treatment group at the midline. The attrition rates are quite small and almost equal for the control and the treatment group, 5.822% and 5.975% respectively. Hence there is no threat of differential attrition.

Table 7: Attrition Rate

	Full Sample	Attrition Rate	Control Group	Attrition Rate	Treatment Group	Attrition Rate
Baseline	861	–	292	–	569	–
Midline	810	5.923%	275	5.822%	535	5.975%

Notes: This table presents the attrition rates across the full sample, the control group, and the treatment group. It is calculated as the sum of households that could not be surveyed during the midline divided by all the households which were surveyed at the baseline.

Table 8 provides an analysis of the attrition based on Equation (4). The assignment of the treatment does not significantly influence the attrition rate for the midline. Therefore, the study has a low attrition rate which is not correlated with the assignment of treatment, hence implying that attrition bias is unlikely to have occurred in this study.

Table 8: Attrition Analysis

	Attrition
Assigned to Treatment	0.007
	(0.017)
Observations	861
Adjusted R^2	0.054

Notes: This table presents the regression results of equation (4). ***, **, and * represent significance at the 1, 5, and 10% level, respectively.

Appendix B – Dataset and Data Cleaning Process

The data which I use in this thesis has been taken from an ongoing RCT. The data provided had already been cleaned for the most part and almost all scores were normalized, hence not a lot of data cleaning was necessary. I did however need to normalize the self-control and aspiration scores at the midline. Furthermore, multiple variables had to be converted into numerical values as some where strings which does not allow for numerical analysis. The sex of the head of household was converted into a binary variable which is equal to 1 if the head of household is female and 0 otherwise. I concatenate the strings for settlement and zone into one variable and turned this into a factor and made it into a numerical variable in order to be able to use it as a fixed effect in the regression analysis. I turned the country of origin, zone label and the enumerator at the midline into factors – assigning a numerical value for each unique observation – as they are fixed effects in the regression. The psychological well-being index has been normalized and becomes more negative if the individual has a better psychological well-being. The opposite holds for individuals who are depressed and have higher anxiety score, their psychological well-being index becomes more positive. In order to make the interpretation more intuitive, I multiplied these numbers by -1 so that a higher score indicates a better psychological well-being and that a lower score indicates a worse psychological being.

I worked with two separate data files, one being solely the baseline and the other one being the combination of both the baseline and the midline. The first dataset contains all the households surveyed at the baseline and the second omitted the attrited households.

Appendix C – Outcome Variables

Table 9: Outcome Variable Descriptions

Self-Control	
Self-Control	10-item Self-Control index from Tangney et al. (2004), adapted by Sedlmayr et al. (2020). These scores are standardized where the mean is zero. A higher number indicates a higher self-control based on the average level of self-control in the sample.
Future Orientation	
Aspirations	Adaptation of Bernard and Taffesse (2014). These scores are standardized where the mean is zero. A higher score indicates higher aspiraitons based on the average level of aspirations in the sample.
Optimism	10-item Revised Life Orientation Test (LOT-R). A higher score indicates that the individual is more optimistic.
Psychological Well-Being	
Depression	20-item CES-D Scale.
Anxiety	7-item GAD-7 Scale. A score of 16 and above on the CES-D scale indicates risk for clinical depression (American Psychological Association, 2011).
Psychological Well-Being Index	Consists of two variables, Depression and Anxiety. Both variables are standardized and aggregated into an index using inverse covariance weights. I reverse coded this variable so that a higher number indicates a better psychological well-being and that a lower number indicates a worse psychological well-being.

Appendix D – Regression Results

Table 10: ITT Estimates

	(1) Self-Control	(2) Aspirations	(3) Depressed	(4) Optimism	(5) Anxiety	(6) Psychological Well-Being
Envelopes	0.031	−0.068	−0.028	0.026	−0.372	0.097*
	(0.049)	(0.074)	(0.028)	(0.190)	(0.231)	(0.052)
Early	−0.082	−0.031	0.062	−0.182	0.310	−0.091
	(0.085)	(0.128)	(0.048)	(0.330)	(0.402)	(0.090)
Age of HoHH	0.003*	−0.004	0.002**	0.003	0.005	−0.002
	(0.002)	(0.003)	(0.001)	(0.007)	(0.008)	(0.002)
Sex of HoHH Female	0.214**	−0.086	0.065	−0.096	−0.083	−0.033
	(0.091)	(0.136)	(0.051)	(0.351)	(0.426)	(0.096)
Household Size	−0.008	0.044***	−0.006	0.029	−0.099**	0.023**
	(0.009)	(0.014)	(0.005)	(0.035)	(0.042)	(0.010)
Country of Origin: South Sudan	−0.130	−0.023	−0.059	0.178	0.331	0.199
	(0.132)	(0.199)	(0.075)	(0.513)	(0.624)	(0.140)
Protection Referral	−0.030	0.118	−0.004	0.049	0.103	−0.032
	(0.066)	(0.098)	(0.037)	(0.254)	(0.308)	(0.069)
Self-Control (Baseline)	0.019					
	(0.024)					
Aspirations (Baseline)		−0.000				
		(0.000)				
Depressed (Baseline)			0.066*			
			(0.038)			
Observations	810	810	810	810	810	810
Adjusted R^2	0.582	0.060	0.249	0.312	0.403	0.421

Notes: The table presents the regression results of Equation (2). The control variables which have been used in this regression are: age of household head, dummy for having a female household head, household size, dummy for the country of origin being South Sudan, dummy for when households received their cash transfer and a dummy for whether the household is a protection referral. ***, **, and * represent significance at the 1, 5, and 10% level, respectively.