Utrecht University

THE ACCESSIBILITY OF ONLINE GOVERNMENT SERVICES

A capability approach to assess the accessibility of childcare allowances in the Netherlands

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Abstract

The Netherlands experienced a crisis in childcare allowances in late 2019, a crisis which highlights problems associated with the digitalization of governmental services. In particular, digitalization may decrease the accessibility of government services, which can subsequently create or exacerbate class and gender inequalities. Access to childcare allowances is essential to many parents, as this provides them with the opportunity to use formal childcare. Access to online childcare allowances, however, requires a certain level of digital literacy (i.e. digital skills) and functional literacy (i.e. ability to understand the system of government allowances) that some parents may not possess. Using Sen's Capability Approach, this study aims to answer how, and to what extent, digital and functional literacy affect parents' perceived access to childcare allowances in the Netherlands. A primarily quantitative approach was taken to answer this question. A survey, held among parents eligible for childcare allowances, was conducted to gather data on functional literacy, digital literacy, perceived access to childcare allowances and a number of sociodemographic factors. Results show higher educated parents had higher levels of digital literacy; there was no such effect of education on functional literacy. Parents with higher levels of functional literacy had greater perceived access to childcare allowances, while digital literacy was not related to perceived access to childcare allowances. This non-significant effect of digital literacy on perceived access to childcare allowances could be a result of the lack of diversity in the sample, as those with lower digital skills were hard to reach given recruitment limitations during the COVID-19 pandemic. Regardless, this research has demonstrated the importance of digital and functional literacy for the accessibility of (online) government services. Policy recommendations include using a realistic perspective on behaviour when implementing policies to make services more accessible.

Key words: Capability Approach, digitalization, childcare allowances, functional literacy, digital literacy.

Introduction

Recently, the Dutch system of childcare allowances has come under scrutiny. While investigating apparent subsidy fraud and misuse, the Dutch Tax Office falsely accused hundreds of parents of fraud and misuse of childcare allowances. These parents were wrongly sanctioned and denied access to childcare subsidies, which for many had severe socio-economic consequences, such as debt, job loss and eviction (Donner, den Ouden, Klijnsma, Akdemir & Gosen, 2020). This childcare allowances affair pertains to a larger debate on the financial insecurity resulting from the allowances system: payments provided in advance frequently require corrections retroactively (Ministerie van Financiën, 2019).

In this context, greater attention is required regarding the accessibility of childcare policy and services in the Netherlands. Accessible, affordable and high-quality childcare is essential for parents to combine parenting with other activities, such as employment or education (Yerkes & Javornik, 2018). Yet, access to childcare is often unequal; this is linked to differences in socio-economic status (Roeters & Bucx, 2018). Income-dependent childcare allowances aim to make formal childcare accessible for all parents, however, parents' perceived access to childcare allowances may affect their opportunities to use formal childcare. As care for children is highly gendered, without access to formal childcare, it is mostly women who would bear responsibility for informal childcare (Saraceno, 2017). This care burden impacts women's current and future employment, termed the 'motherhood penalty' (Miller, 2014). Moreover, lower-class families might have lower (perceived) access to formal childcare due to financial constraints, limiting their employment opportunities, and with possible detrimental effects for their children's education (Léon, 2017). As such, inaccessible childcare allowances could exacerbate gender and class inequality, while these allowances were designed to reduce inequality (Roeters & Bucx, 2018).

Childcare services in the Netherlands are marketized: formal childcare is provided by private organizations, while the government regulates this market through quality monitoring and providing childcare allowances for eligible parents (Akgunduz & Plantenga, 2014; Roeters & Bucx, 2018). The Tax Office executes the provision of childcare allowances, which parents can access online. The current crisis surrounding childcare allowances suggests a larger, underlying problem: the digitalization of governmental allowances can create or exacerbate social inequalities along class and gender lines. Given that the digitalization of government services (E-government) is a major aim for both national and supranational governments, it is important to safeguard the accessibility of these services in the development of digitalization (Kinnunen, Androniceanu, & Georgescu, 2019; Rijksoverheid, 2019).

Parents' perceived access to childcare allowances might be affected by various factors, such as parents' *functional literacy*, the various competencies needed to function appropriately in society (Gutstein, 2006), and *digital literacy*, the use of digital tools to create meaning and communicate with others (Neumann, Finger & Neumann, 2017). Insufficient digital and functional literacy might lower parents' access to childcare allowances, which is illustrated by the fact that 17% of parents thinks applying for childcare allowances is complicated (Roeters & Bucx, 2018), and that more than 80% of childcare allowances requires correcting retroactively (Ministerie van Financiën, 2019).

Childcare capabilities, "parents' capabilities to organize childcare in a way that enables them to pursue those activities in life they have reason to value," can be affected by this digitalized system of marketized childcare services (Yerkes & Javornik, 2018). Previous research mainly focused on the complex interplays of quality, affordability, accessibility, flexibility, and/or availability of formal childcare (den Dulk & Yerkes, 2016; Plantenga & Remery, 2017; Roeters & Bucx, 2018; Yerkes & Javornik, 2018). This is the first study to focus on the accessibility of digitally-provided childcare allowances as a crucial component of parents' childcare capabilities, given that these allowances increase the affordability of formal childcare. This study's novelty is that it examines perceptions of the accessibility of childcare allowances, an example of E-government services, in relation to digital and functional literacy. This could be of key societal and scientific value, considering the societal development of digitalization (Kinnunen et al., 2019), and the absence of research on this topic. This thesis will address this research gap, focusing on the effect of digitalization on parents' childcare capabilities, and thus the extent to which digitalization potentially creates or sustains social inequality.

Theoretical Framework

Childcare allowances are crucial to parents' childcare capabilities (Plantenga, Remery, & Takács, 2012). In the Netherlands, childcare allowances are means-tested, and also depend on various other factors, such as parents' working hours (Akgunduz & Plantenga, 2014; Belastingdienst, n.d.). Applying for childcare allowances requires certain knowledge, skills and capacities, which can make this application procedure quite demanding (Bovens, Keizer & Tiemeijer, 2017). Specifically, this application procedure requires functional and digital literacy. A capability approach that explicitly incorporates functional and digital literacy can be a useful theoretical framework for examining parents' perceptions of the accessibility of childcare allowances.

Functional and Digital Literacy

Functional literacy can be crucial to accessing social policies (Yerkes, Javornik and Kurowska, 2019), yet, it remains an ambiguous term; there is no agreed upon definition or measurement (OECD, 2000). Using functional literacy instead of 'regular' literacy is essential, as this research focuses on more than reading and writing skills. Jones (1988, as cited in Rassool, 1999) described functional literacy as literacy education integrated in vocational education. This vocational education trained students for a specific occupation, and students were taught the necessary literacy skills incidentally. This definition, however, predominantly focuses on employment, while functional literacy increasingly relates to societal participation (Rassool, 1999). Others have defined functional literacy as the reading and writing skills and knowledge that allow an individual to participate in activities in which literacy is expected in their social/cultural group (Gray, 1969). However, functional literacy is more than the ability to read and write; it includes communication in society, social practices, relationships, knowledge, language

and culture (OECD, 2003, as cited in Wickens & Sandlin, 2007). A more comprehensive definition of functional literacy is the various competencies individuals need to obtain in order to function appropriately in society (Gutstein, 2006). This latter definition will be adopted, as it is more inclusive than other conceptualizations; it incorporates skills, knowledge and capacities, e.g. being familiar with the system and knowing how to navigate it (Bovens et al., 2017). Exact statistics on functional literacy are not available, however, regular literacy statistics suggest 2.5 million people in the Netherlands have low literacy skills (Algemene Rekenkamer, 2016). This population struggles with tasks such as reading government information and filling in forms, indicating lower functional literacy as well, as they do not possess the competencies necessary to function appropriately in Dutch society.

Digital literacy is key in applying for childcare allowances in the Netherlands, and increasingly for many welfare state benefits throughout Europe (Kinnunen et al., 2019). Digital literacy is defined as the use of digital tools to create meaning and communicate, and includes integrating and navigating digital texts, evaluating digital information and using visual representations (Neumann et al., 2017). Within digital literacy, two types of skills can be distinguished: operational and informational (Baay, Buisman & Houtkoop, 2015). *Operational* digital skills include being able to operate a computer, such as typing, whereas *informational* digital skills refer to the ability to solve everyday problems using a computer, e.g. gathering information online. Among Dutch 12-74 year-olds, 56% has low informational digital skills, and 10% also has very low operational digital skills. Low digital literacy is most prevalent among the elderly and adults with low literacy skills, however, it is not exclusively a problem for older people: more than 35% of Dutch 16-24 year-olds possesses low or insufficient digital literacy skills (Baay et al., 2015). As such, we must reject the idea of "digital natives", which presumes young people grow up using information technology, instead of acquiring these skills at a later age (ECDL, 2018).

As digital and functional literacy are not ubiquitous, this might affect the accessibility of online services, such as childcare allowances. Dutch parents are expected to be able to complete the online childcare allowance application self-sufficiently, yet many parents struggle with this procedure (Bovens et al., 2017; Roeters & Bucx, 2018), presumably due to low functional and digital literacy. Low 'regular' and digital literacy often coincide with other social determinants, such as lower education, lower income, unemployment and first-generation migration status (Baay et al., 2015; Houtkoop, Allen, Buisman, Fouarge & van der Velden, 2012). Moreover, social and digital exclusion frequently coexist within the same people, thereby having a reinforcing effect; those experiencing social exclusion often have fewer digital skills, which creates even more social exclusion as society is increasingly organized around digital infrastructure, with services and communication increasingly taking place online (Helsper, 2012). Research on digital and functional literacy in relation to the accessibility of online services is limited, but important given the emphasis placed on Dutch citizens' ability to organize aspects of their life self-sufficiently (Bovens et al., 2017), and thus the extent to which they are expected to possess functional and digital literacy.

The Capability Approach

To critically evaluate access to childcare allowances in relation to different personal, societal and institutional factors, such as digital and functional literacy, this study uses the Capability Approach (CA). The CA is a philosophical framework, initially developed by Amartya Sen, and later elaborated on by Martha Nussbaum (Robeyns, 2017). The added value of using the CA is that it sees people as embedded in their personal situations and broader social structures, and assumes that individual freedoms may be limited by personal and societal constraints (Yerkes et al., 2019). The CA takes a pluralistic approach to viewing people's lives, acknowledging that individuals value different elements in life, and policy should aim to capacitate citizens to lead a life they value (Robeyns, 2017). Due to Sen and Nussbaum's different backgrounds, two different approaches have developed. An important difference pertains to the underlying paradigm: the foundation of Sen's CA is based on economy and philosophy, while Nussbaum takes a more moral-legal-political approach (Yerkes et al., 2019). Nussbaum's CA proposes ten basic human capabilities that governments should guarantee for their citizens, whereas Sen's approach intends to assess and measure what we value in life (Nussbaum, 1997; Robeyns, 2005). Sen's CA can be used to evaluate individual wellbeing, social justice and equality: he proposes the idea of *basic capability equality*, that aims to serve as a foundation of what morally should be considered equality (Robeyns, 2005; Sen, 1980). He critiques other interpretations of equality, defining equality as the extent to which everyone has basic capabilities. This research will use Sen's approach, as Nussbaum's ten capabilities do not fit the current research (Nussbaum, 1997).

The CA consists of (at least) five key concepts: *capabilities*, *means*, *conversion factors*, *agency* and *functionings*. *Capabilities* are one's real freedom to act (Sen, 1992); in this context, this could be parents' real opportunities to use formal childcare. Childcare capabilities can be limited by several factors, such as the opening hours of formal childcare, waiting lists (Roeters & Bucx, 2018), and the accessibility of childcare allowances. In the Netherlands, parents' employment status and income are the only formal prerequisites to qualify for childcare allowances, however, the accessibility of childcare allowances may be restricted by other factors, such as the digitalization of government services.

Childcare allowances, given the partial financial reimbursement of formal childcare costs, can be considered *means*, as means refers to material or financial resources (Robeyns, 2017).

Conversion factors (CFs) are factors that determine the extent to which individuals are able to convert means into capabilities (Sen, 1992). The concept of CFs can be applied to a more extensive understanding of resources, including immaterial or immeasurable resources, such as education (Robeyns, 2017). Considering CFs allows us to see people in the different contexts in which they are embedded, and how these contexts shape what people are effectively able to do and be. From a policy perspective, providing childcare allowances equals parents having access to these allowances. In reality, the numerous personal, social, institutional and environmental contexts parents are embedded in might limit their ability to access childcare allowances. Distinctions in CFs are frequently made based on the source of these factors, such as personal, societal and institutional CFs (Yerkes et al., 2019).

Institutional CFs stem from the institutional context one lives in, e.g. the manner in which collective provisions are arranged, such as digitally-accessible childcare allowances (Otto & Ziegler, 2006). *Societal CFs* emerge from the society one is embedded in, like social norms, hierarchies or gender roles that constitute what people should do, and thus may limit what people can do (Robeyns, 2005). *Personal CFs* are internal to the person, e.g. gender or intelligence (Robeyns, 2017).

This thesis predominantly focusses on personal conversion factors, as digital and functional literacy are two CFs currently unaccounted for in most research. Digital and functional literacy are considered personal CFs as they are intrapersonal factors that may affect whether people are capable of applying for childcare allowances. The CA provides a compelling perspective on digital services, as the accessibility of online services is not guaranteed when people have access to the Internet; other important prerequisites include skills, attitudes and additional resources (Helsper, 2012).

Other potentially relevant CFs may be age, gender, education, ethnicity, income and employment conditions. Age, gender, ethnicity, educational level and income could be relevant, as they might be related to digital and functional literacy (Baay et al., 2015; Houtkoop et al., 2012; Helsper, 2012). Employment conditions may be important, given that more precarious employment conditions might indicate income instability, for example for independent and flexible workers (Burgoon & Dekker, 2010). This income instability makes applying for childcare allowances more complex, as childcare allowances are based on estimated income (Annink & den Dulk, 2014).

Furthermore, capabilities are affected by *agency*, an individual's ability to act independently and make decisions free from external constraints (Sen, 1999). Agency, however, is never completely free; it is constrained by the limits of our natural abilities, and environmental, social, cultural and institutional settings (Hobson, 2017).

The CA refers to achievements as *functionings* (Robeyns, 2017). Scholars frequently distinguish between valued and achieved functionings; a *valued* functioning is an achievement that one wants to accomplish (Sen, 1992). However, not all valued functionings are achieved, as individuals might be unable to pursue them due to agentic constraints. These constraints can lead to differences in *achieved* functionings: the achievements that were accomplished (Yerkes et al., 2019).

This study focuses on *perceived* access to childcare allowances. Such perceptions, currently understudied, can be important, as parents who perceive childcare allowances as inaccessible may have fewer childcare capabilities. Many parents consider applying for childcare allowances complicated and 44% of parents thinks the system of childcare allowances creates financial insecurity (Roeters & Bucx, 2018). The administrative burden and financial insecurity might limit parents' *perceived* access to childcare allowances, while the *actual* accessibility of these allowances remains unaffected, epitomizing the importance of acknowledging parents' *perceived* access to childcare allowances.

[1]Current Study

Based on this research background, functional and digital literacy are expected to be key variables in explaining differences in perceived access to childcare allowances. Therefore, this research will use the capability approach to answer the research question: how, and to what extent, do digital and functional literacy affect parents' perceived access to childcare allowances?

As functional and digital literacy are necessary to apply for childcare allowances, they are expected to directly affect perceived access (Figure 1). Educational levels were expected to be closely related to functional and digital literacy (Baay et al., 2015; Houtkoop et al., 2012), and through digital and functional literacy, education was expected to affect perceived access, creating a full parallel mediation model. First, H1 states that higher educated parents possess higher levels of digital literacy than lower educated parents. Second, (H2) in line with H1, higher educated parents were expected to possess higher levels of functional literacy than lower educated parents. Third, (H3), parents with higher levels of digital literacy were expected to have greater perceived access to childcare allowances than parents with lower levels of digital literacy, and fourth, (H4) parents with higher levels of functional literacy were expected to have greater perceived access to childcare allowances than parents with lower levels of functional literacy. The resulting mediating hypotheses state that (MedH1) digital literacy mediates the relationship between educational level and perceived access to childcare allowances, and (MedH2) functional literacy mediates the relationship between educational level and perceived access to childcare allowances. Income instability, resulting from factors such as employment status and contract type, was also expected to affect perceived access to childcare allowances (Burgoon & Dekker, 2010; Annink & den Dulk, 2014), specifically, (H5) parents with more income instability were expected to have lower perceived access to childcare allowances than parents with less income instability. Finally, sociodemographic variables such as age, gender, ethnicity and income were included as control variables, as these might be related to functional and digital literacy (Baay et al., 2015; Houtkoop et al., 2012). Additionally, these sociodemographic variables provided information on the sample's generalizability. Please note the distinction between income and income instability: income, as a control variable, was considered a proxy of socio-economic status, while income instability, as an independent variable, was explicitly expected to affect parents' perceived access to childcare allowances.

[1]This research is part the ERC project CAPABLE. As such, this study will be in accordance with the ethical guidelines developed and approved for the entire project.

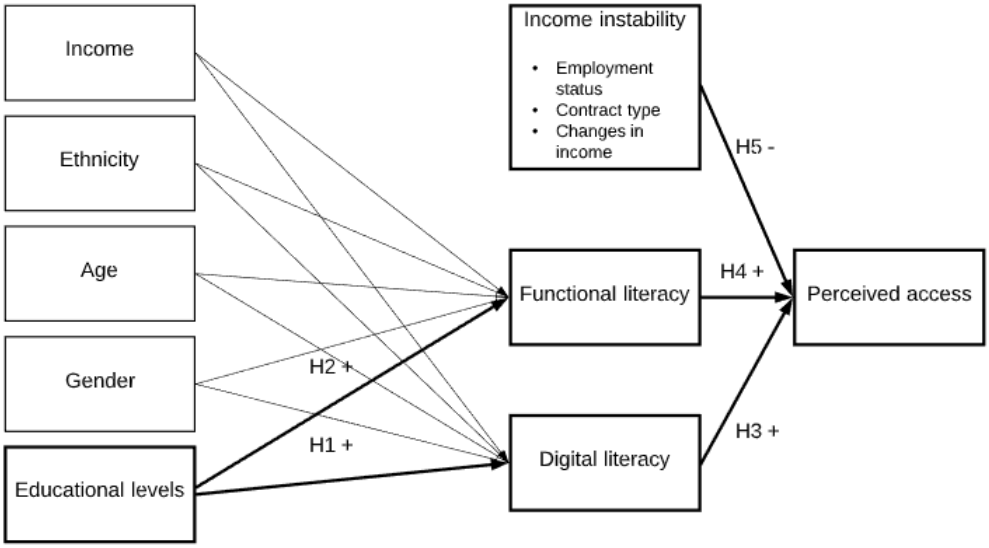

Figure 1. Proposed theoretical model.

Methods

This study required a quantitative approach, since it aimed to explain variance in perceived access to childcare allowances, using functional and digital literacy as mediators on the relationship between education and perceived access to childcare allowances (Field, 2013). A quantitative survey was used to gather sociodemographic data, data on functional and digital literacy, and data on parents' perceived access to childcare allowances. The survey was intended to be administered both online and in paper form, allowing for parents with lower functional and/or digital literacy skills to access the questionnaire (De Leeuw, 2018).

[2]Sample and Data Collection

The research population consisted of parents eligible for childcare allowances. This included parents with at least one child aged 12 years or younger living in the Netherlands. Another precondition was that parents (both parents if in a couple) were employed (or were employed in the past six months), in education or in a reintegration project (Belastingdienst, n.d.).

` Participant recruitment was predominantly done online, while this was initially intended to be a combination of online and offline recruitment. The limited recruitment was a direct consequence of the measures taken to reduce the spread of COVID-19. Recruitment was therefore achieved through social networks, snowball sampling, *buurtteams Utrecht* (a social help organization that helps those with financial problems), and formal childcare organizations helped distribute the paper-based survey.

[2]Data collection and management were in accordance with the ethical guidelines developed and approved for the ERC project CAPABLE. Please refer to appendix A for more detailed information on data collection, participant recruitment and ethical guidelines.

The survey had 124 respondents: 80% (N=100) was female and 18.4% was male (N=23). Respondents' ages ranged from 23 to 73, 36 being the average age. 2.4% (N=3) was lower educated, 20.2% (N=25) had an intermediate educational level, and 77.4% (N=96) was higher educated. Furthermore, most participants identified as Dutch (94.4%, N=117). Due to the overrepresentation of higher-educated parents, further statistics were weighted to better resemble the Dutch population (SCP, 2018) (Table 4).

Instruments[3]

Dependent variable. *Perceived access to childcare allowances* was measured through the statement 'I think applying for childcare allowances is difficult'. A 7-point Likert-scale was used, with responses ranging from 'completely agree' to 'completely disagree' (Roeters & Bucx, 2018).

Independent variable. *Educational level* was measured using an existing scale that contains all levels of the Dutch education system (SCP, 2017). This was recoded into higher educated and lower-intermediate educated, given the underrepresentation of lower educated individuals. Low-intermediate education was used as the reference category, to make data interpretation more intuitive.

Mediators. *Digital literacy* was measured using a Dutch translation of the digital competence framework for citizens (Carretero, Vuorikari & Punie, 2017). Two researchers separately translated the framework and later discussed the translation to generate inter-translator reliability. This study's measure contained statements to measure social, informational and problem-solving digital skills. The original measure also contains the domain *software skills for content manipulation;* this domain was excluded to reduce the survey's length and increase its perceived relevance; factors that both affect the probability of participants completing the survey (Galesic, 2006). While this measure was designed to distinguish between digitally literate and illiterate, this study used no such distinction. In line with the increasing debate which rejects threshold-scores for literacy, this study considered digital literacy a continuum (OECD, 2000). This measure could not be validated using a principal components analysis (PCA) and reliability analysis, as these methods are problematic with binary data (Kolenikov & Angeles, 2004). Rather, a sum score for the three domains and the total score were used, by adding points for every competency that was successfully completed.

The measure for *functional literacy* was developed using cognitive pre-testing: two interviews were held with people who had experience with the application procedure for childcare allowances. The 'thinking-aloud-probe' was used to step-wise identify the competencies necessary to apply for childcare allowances (Lenzner, Neuert & Otto, 2016; Gutstein, 2006)[4]. The following competencies emerged from analysis: *understanding the system, working meticulously, anticipating and keeping up with changes, organizational skills* and *regular literacy* (appendix D). These competencies were translated into nine

[3] For the complete survey, refer to appendix C.
[4] For the interview guide, refer to appendix B.

statements that aim to measure functional literacy. Additionally, an existing instrument to measure literacy, that is, people's ability to read and write, was included in the survey[5]. The DIS-scale, developed by the Foundation for Reading and Writing was used (De Greef, Van Deursen & Wubbing, 2013), as literacy emerged as an essential component of functional literacy. Functional literacy and regular literacy were measured using 10-point Likert-scales, and like digital literacy, these were treated as continuous variables. PCA and reliability analyses were conducted to assess the underlying structure and reliability of the measures for regular literacy and functional literacy (appendix F) (Field, 2013). Cronbach's alpha values for these measures were .948 and .932, meaning both measures can be considered reliable.

Demographic variables. This study included age, gender, ethnicity and income as control variables. *Age* was measured in years, and for *gender*, respondents were asked whether they identify as male, female or other (Bittner & Goodyear-Grant, 2017).

Ethnicity was measured through self-identification and country of birth. Self-identification is less objective than country of birth, but self-identification is the most accurate measurement from respondents' perspective (Burton, Nandi & Platt, 2010). As is common in the Netherlands, a few standard options were given, such as Moroccan, Turkish, Dutch Antillean and Surinamese (SCP, 2016).

Income was measured in 4 categories: below €1500, €1500-€2500, €2500-€3500, higher than €3500, and an 'I don't know/would rather not say' option (SCP, 2017). Due to underrepresentation in the category <€1500, categories <€1500 and €1500-2500 were merged. For the mediation analysis, income <3500 was used as the reference category, to make data interpretation more intuitive.

Covariates. *Income instability* was assessed through employment status, contract type and changes in income (SCP, 2016). For *employment status*, options were employed, self-employed, unemployed, in education/a reintegration project and other. *Contract type* had the options permanent contract, temporary contract, on-call contract and temporary employment contract (Table 1) (Rijksoverheid, n.d.). Due to underrepresentation of some categories, contract type and employment status were transformed into dummy variables 'paid employment or other' and 'permanent contract or other'. Finally, as a general measure of income instability, respondents were asked to indicate to what degree their income had remained stable or changed since having a child, measured on a 10-point Likert-scale.

Table 1

Different contract types in the Dutch labour market

Contract type	Explanation of employment conditions
Permanent contract	A contract with a set number of working hours for an unspecified term.
Temporary contract	A contract with an employer, with a set number of working hours for a specified term.

[5]This measure is developed by and borrowed from Stichting Lezen en Schrijven, and cannot be used or reproduced without the foundation's consent. All rights belong to Stichting Lezen en Schrijven.

On-call contract	A contract in which the employer can decide on the employee's working hours, and the number of working hours can vary per week.
Temporary employment agency contract	A contract with an employment agency which places people with an employer for a specified period, based on the employer's needs.

Analytical Strategy

This thesis relies on a parallel mediation model (Baron & Kenny, 1986). This required establishing relationships between X (educational level) and Y (perceived access to childcare allowances), X and M^1 (digital literacy), X and M^2 (functional literacy), M^1 and Y, M^2 and Y, before establishing the indirect effect of X on Y via M^1 and M^2. The analysis was conducted in SPSS using Process Model 4, which is a mediation model that allows for conducting parallel mediation analyses with covariates and control variables (Field, 2013).

Before running the mediation analysis, assumptions were tested concerning the quality of the data (Field, 2013). Data indicated normality for age, but non-normality for digital and total functional literacy (the combined score for regular and functional literacy), which were skewed. Perceived access appeared to have a bimodal distribution. Tolerance and VIF-statistics indicated no multicollinearity between variables. A normal P-P plot and a scatterplot indicated normality, linearity and homoscedasticity of residuals. Univariate outliers were excluded from the analysis; multivariate outliers were identified using Mahalanobis distances, but these were not excluded as Cook's value was smaller than 1 for all outliers, meaning these outliers did not have a large influence on the data. The mediation analysis tested the effect of digital and total functional literacy as mediators on the relationship between educational level and perceived access to childcare allowances. Income, age, gender and country of birth were included as control variables; self-identified ethnicity was excluded due to low variance. Contract type was added as a covariate, while the other proxies of income instability were excluded, as pretesting indicated these did not affect perceived access to childcare allowances.

Additionally, four hierarchical multiple regressions were conducted to measure the effect of the sociodemographic variables on digital, regular, functional, and total functional literacy. All violated the assumption of normality, and Tolerance and VIF-scores indicated that the assumption of additivity was not violated. The measures for digital and regular literacy also violated the assumptions of normality and homoscedasticity of residuals, regular literacy residuals were also non-linear. As a consequence of these data limitations, results might be less reliable. Concerning univariate and multivariate outliers, the same methods were used as in the mediation analysis. Here too, self-identified ethnicity was excluded.

Ethics

This study met all required ethical considerations of the Faculty of Social and Behavioural Sciences (Utrecht University) needed for research with human participants. For more detail, see Appendix A.

Results

The mediation analyses revealed a significant effect of education on digital literacy (B=1.28, BCA CI [.05, 2.51], p=.042), but not on total functional literacy (B=6.34, [-5.28, 17.97], p=.282), meaning higher educated parents were more digitally literate than lower-intermediate educated parents, but higher-educated parents were not more functionally literate than lower-intermediate educated parents, confirming hypothesis 1 and rejecting hypothesis 2. Digital literacy did not predict perceived access to childcare allowances (B=-.14, [-.30, 01], p=.067), however, total functional literacy did predict perceived access (B=.02, [.01, .04], p=.006). This means parents with higher levels of digital literacy did not have greater perceived access to childcare allowances than parents with lower levels of digital literacy, but parent with higher levels of functional literacy did have greater perceived access to childcare allowances than parents with lower levels of functional literacy, rejecting hypothesis 3 and confirming hypothesis 4. There were no mediation effects for digital and total functional literacy, rejecting MedH1 and MedH2. Contract type did not predict perceived access to childcare allowances in this model (B=-.82, [-1.73, .10], p=.080), however, it did predict perceived access to childcare allowances when all other predictors were excluded (B=-1.02, p=.031), meaning those with a permanent contract had greater perceived access to childcare allowances than those with flexible contracts, partially confirming H5. This model significantly explained variance in perceived access to childcare allowances (R^2=19.33%, F(8, 93)=2.79, p=.008), and had large observed statistical power of .95, which was computed with a post-hoc power analysis, using G*Power (Faul, Erdfelder, Buchner & Lang, 2009).

The hierarchical multiple regressions (table 2 and 3) revealed that education significantly explained variance in digital literacy and regular literacy, as higher educated parents had significantly higher levels of digital and regular literacy than lower-intermediate educated parents. It should be noted that the effect of education on regular literacy was only significant when excluding other predictors. Income significantly explained variance in functional and total functional literacy: parents with an income below €2500 had significantly lower levels of functional and total functional literacy than parents with an income higher than €2500. Age significantly explained variance in functional literacy, as older people had lower levels of functional literacy than younger people. Variance in total functional literacy (R^2 =13.7%, F(6, 114)=3.01, p=.009) and functional literacy (R^2=10.2%, F(6, 115)=2.18, p=.050) was significantly explained by the total model, while variance in digital literacy (R^2=3.7%, F(1, 118)=4.55, p=.035) and regular literacy (R^2=3.3%, F(1,115)=3.94, p=.05) was significantly explained by education. Post hoc power analyses for the total models revealed relatively weak statistical power, ranging from .62 for digital literacy to .78 for total functional literacy (Faul et al., 2009).

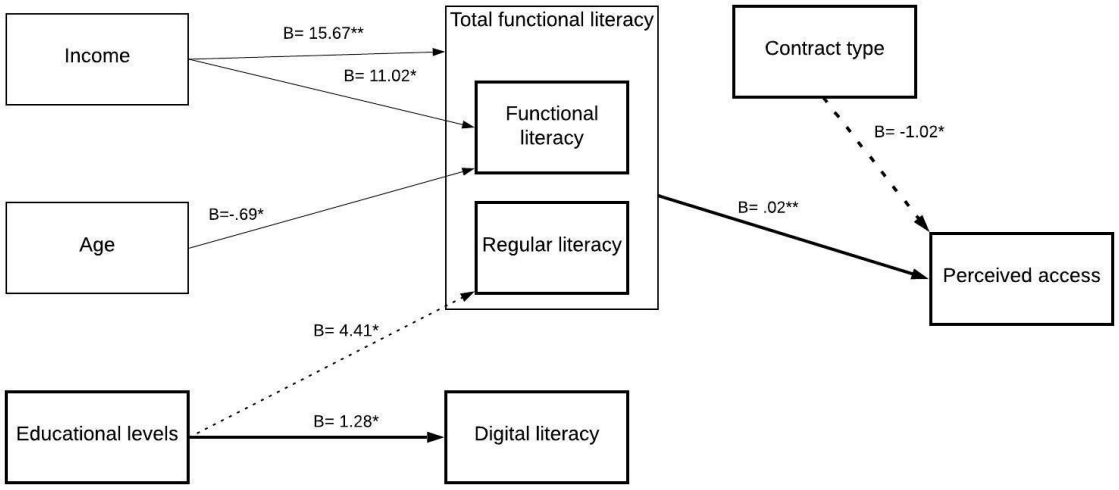

Figure 2. Final model including only significant relationships, coefficients and levels of significance
Note. *p=<.05, **p<.01.

Discussion

The research question 'how, and to what extent, do digital and functional literacy affect parents' perceived access to childcare allowances', can be answered by stating that functional literacy affects parents' perceived access to childcare allowances, as parents with higher levels of functional literacy have greater perceived access to childcare allowances. The non-significant relationship between digital literacy and perceived access to childcare allowances can likely be attributed to the underrepresentation of people with lower digital literacy; interviews with social work organizations confirmed that a lack of digital literacy is an issue for parents when accessing childcare allowances. Reaching parents with low digital literacy, however, is challenging, as digital and social exclusion often go hand in hand (Helsper, 2012). The COVID-19 pandemic made reaching respondents with low digital literacy even more challenging, as data gathering was predominantly done online.

These findings are important, as they illustrate that not all parents have equal access to childcare allowances, but this depends on parents' functional literacy. Sociologists might look at this issue as Bourdieu's notion of cultural capital, defined as all forms of knowledge competencies and "*how to"* developed during the socialization process (Bourdieu, 1979). This definition relates closely to the definition of functional literacy adopted in this study, 'the various competencies individuals need to obtain in order to function appropriately in society' (Gutstein, 2006). Both refer to some cultural knowledge and/or competencies that are of importance for societal participation, such as *understanding the system*, a competency that emerged in the analysis of the qualitative cognitive pre-testing interviews. Cultural, social and economic capital often have a reinforcing effect on one another (Breinholt & Jæger, 2020), similar to the importance of functional literacy for accessing childcare allowances: insufficient functional literacy can decrease access to financial resources such as digitally-accessed childcare

Table 2

Unstandardized (B) and Standardized (β) Regression Coefficients, Squared Semi-Partial Correlations (sr^2) and standard errors of predictors of Functional and Total Functional Literacy

Variable	*Functional literacy (excluding regular literacy)*				*Total functional literacy (including regular literacy)*			
	B [95% CI]	Std. error	sr^2	*β*	B [95% CI]	Std. error	sr^2	*β*
Block 1								
Education (ref- low-intermediate)								
High	1.45 [-6.94, 9.84,]	4.24	.031	.031	-5.81 [-3.79, 15.42]	4.85	.109	.109
R^2			.001				.012	
Adjusted R^2			-.007				.004	
Block 2								
Education (ref- low-intermediate)								
High	1.74 [-7.06, 10.54]	4.44	.035	.037	5.36 [-4.57, 15.30]	5.02	.093	.101
Age	**-.69* [-1.44, -.12]**	.33	-.184	-.206	-.73* [-11.80,]	.38	-.189	-.189
Gender (ref- female)								
Male	1.59 [-7.50, 10.68]	4.59	.031	.032	-1.53 [-11.80, 8.74]	5.18	-.026	-.027
Country of birth (ref– NL)								
Other	8.16 [-5.19, 21.52]	6.74	.107	.111	7.74 [-7.33, 22.81]	7.61	.089	.092
Income (ref – <2500)								
2500-3500	**14.52* [2.13, 26.92]**	6.26	.205	.267	**20.27** [6.28, 34.26]**	7.06	.250	.325
>3500	**11.02* [1.27, 20.78]**	4.92	.198	.265	**15.67** [4.66, 26.69]**	5.56	.245	.328
R^2			.102*				**.137****	
Adjusted R^2			.055				.091	

Note. N=122 for functional literacy and 121 for total functional literacy. CI= confidence interval. *p < .05, **p < .01.

Table 3

Unstandardized (B) and Standardized (β) Regression Coefficients, Squared Semi-Partial Correlations (sr^2) and standard errors of predictors of Digital and Regular Literacy

	Digital literacy				*Regular literacy*			
	B [95% CI]	Std. error	sr^2	*β*	B [95% CI]	Std. error	sr^2	*β*
Block 1								
Education (ref- low-intermediate)								
High	**1.12* [.08, 2.15]**	.523	.193	.193	**4.41* [.01, 8.81]**	2.22	.182	.182
R^2			**.037***				**.033***	
Adjusted R^2			.029				.025	
Block 2								
Education (ref- low-intermediate)								
High	**1.48* [.35, 2.61]**	.57	.234	.255	3.83 [-.90, 8.55]	2.39	.146	.158
Age	-.05 [-.14, .03]	.04	-.107	-.120	-.04 [-.40, .31]	.18	-.022	-.025
Gender (ref - female)								
Male	-.26 [-1.41, .90]	.58	-.040	-.042	-2.89 [-7.80, 2.02]	2.48	-.106	-.112
Country of birth (ref – NL)								
Other	.19 [-1.49, 1.87]	.85	.020	.021	-1.69 [-9.59, 6.22]	3.99	-.039	-.040
Income (ref – <2500)								
2500-3500	.46 [-1.10, 2.01]	.79	.052	.068	6.17 [-.42, 12.76]	3.33	.169	.221
>3500	-.44 [-1.67, .79]	.62	-.064	-.086	4.86 [-.37, 10.09]	2.64	.168	.224
R^2			.078				.085	
Adjusted R^2			.029				.035	

Note. N=120 for digital literacy and 117 for regular literacy. CI= confidence interval. *p < .05, **p < .01.

allowances. This can subsequently limit parents' childcare capabilities, which can have a negative impact on parents' (predominantly mothers') labour market participation and career prospects, and their children's educational development. This intergenerational transmission of social class can limit upward social mobility for lower-class families, and as such, unequal access to childcare allowances can reinforce instead of reduce existing inequality in class and gender (Léon, 2017; Saraceno, 2017).

The significant effect of educational level on digital and regular literacy confirm other research (Baay et al., 2015; Houtkoop et al., 2012). The fact that there was no effect of education on total functional literacy indicates that functional literacy might not reflect intelligence, but more so, certain skills, personality traits and capacities. A parallel can be drawn between functional literacy and '*doenvermogen'* or the '*capacity to act'* (Bovens et al., 2017). This capacity to act states that whether someone is able to do something not only depends on their intellectual ability, but also on other factors, such as personality and coping styles. Age and income partially explained variance in functional literacy, yet, a large proportion of variance remains unaccounted for. Hence, like the capacity to act, functional literacy might be determined by other psychosocial factors. Several factors that constitute the capacity to act might also be relevant for functional literacy, such as stress, self-efficacy (one's belief in oneself), and having an approach- or avoidance-temperament (acknowledging and tackling problems versus ignoring problems) (Bovens et al., 2017; Elliot & Thrash, 2010; Haushofer & Fehr, 2014). Interestingly, stress, as a result of poverty, can lead to short-sightedness and other decision-making that reinforces poverty (Haushofer & Fehr, 2014). This offers a possible explanation for the relationship between income and functional literacy: if parents with a lower income experience more stress due to their financial situation, this stress and the resulting short-sightedness might lower their functional literacy, given that *anticipating and keeping up with changes* is one of the competencies identified in the cognitive pre-testing interviews. Subsequently, this lower functional literacy might limit these parents' access to childcare allowances and consequently, this could limit their use of formal childcare and their opportunities for employment.

Income instability was not a significant predictor in the analysis, however, more than 30 parents reported a change in income as the reason why errors were made in the application procedure. Many reported their income had changed, due to flexible working, self-employment or other factors, which resulted in them receiving either too much or too little childcare allowances. The statistically non-significant effect of these more precarious employment conditions on perceived access to childcare allowances could be a result of the low representation of self-employed and flexible workers; this relationship demands more attention in future research.

This study focussed on the accessibility of childcare allowances as a crucial part of childcare capabilities. The analysis revealed that functional literacy can be considered a personal CF that affects parents' access to childcare allowances. Future research using the CA should take into account digital and functional literacy when assessing people's capabilities, as society is increasingly organized around digital infrastructure (Helsper, 2012), and people are expected to organize aspects of their life self-

sufficiently (Bovens et al., 2017), yet digital and functional literacy are not ubiquitous. Hence, digital and functional literacy are not only relevant CFs in this context; depending on environmental and institutional contexts, they are increasingly relevant for other capabilities, such as employment, education (Baay et al., 2015) and accessing other E-government services (Kinnunen et al., 2019). Institutional contexts are of importance here, as the Netherlands, and other countries in north-western Europe, are further ahead in this development of digitalization and E-government than, for instance, eastern European countries (Kinnunen et al., 2019), meaning digital literacy might be less important in countries where digitalization is less well developed.

Besides the accessibility of childcare allowances, childcare capabilities are also affected by factors such as the quality of formal childcare, which, in the Netherlands, is just within the limits of what is considered sufficient internationally. This could lead to the agentic decision to not use formal childcare (Roeters & Bucx, 2018). To gain a holistic understanding of parents' childcare capabilities, it is important that future research considers all aspects of formal childcare.

Various measures were taken to secure a diverse sample, however, limitations concerning the sample's generalizability persist, thus limiting the study's external validity and reliability. The restrictive measures that were taken during the pandemic made reaching respondents for research increasingly difficult, which negatively affected this sample's diversity and size. Higher educated respondents were overrepresented, while other groups were underrepresented, which presumably affected other data, e.g. the scores for regular, functional and digital literacy, given the previously established relationships between (digital) literacy and sociodemographic factors (Baay et al., 2015; Houtkoop et al., 2012). The lack of diversity in the sample is also reflected in data quality; several data assumptions were violated, such as normality, additivity for regular literacy, and normality, homoscedasticity and linearity of residuals for several models.

Other methodological critiques concern this study's internal validity and reliability. The internal validity might be limited, as the measure for digital literacy was shortened, and the measures for regular, digital and functional literacy were all based on self-assessment rather than test-assessment (ECDL, 2018). Moreover, the outbreak of Covid-19 might have increased the scores for digital literacy, as many people required using digital media in order to work from home, increasing the number of digital competencies people accomplished in the past three months. To mitigate the effect of Covid-19 on the outcomes, the survey asked about respondents' employment situation prior to the pandemic.

This study used Baron and Kenny's mediation model (1968), which is not uncontested. This model lacks statistical power, as it requires rejecting 4 null hypotheses in order to establish a mediation effect, hereby increasing the chance of type I errors, rejecting a true hypothesis (Hayes, 2009). Baron and Kenny's mediation model might be subordinate to other statistical procedures such as structured equation modelling (SEM), but Baron and Kenny's model was recommended given the researcher's experience with quantitative methods.

The dependent variable was treated as an interval variable, while Likert-scales should actually be considered ordinal variables. To increase the variable's reliability and accuracy, a 7-point Likert-scale was used, instead of the original 5-point Likert-scale (Joshi, Kale, Chandel & Pal, 2015). When interpreting the data, it should be noted that scores might not be equidistant, meaning the difference between 5 and 6 might not be equal to the difference between 6 and 7.

Future research could build on the findings from this study. First, more research should be conducted on the accessibility of online services, such as childcare allowances, in relation to digital and functional literacy. This research aimed to do so, but the findings might be less reliable due to the sample size limitations. Moreover, exploring the accessibility of E-government services in relation to psychosocial factors could be interesting, as this study indicated the importance of functional literacy, yet it remains unclear what underlying factors might constitute these differences in functional literacy.

To improve the accessibility of childcare allowances and other government services, first, it is important that these should not be offered exclusively online. Regardless of the fact that the relationship between digital literacy and perceived access to childcare allowances was not confirmed, the interviews emphasized the importance of digital literacy for accessing childcare allowances. Second, policymakers should consider functional literacy: this study shows that functional literacy is required in order to access childcare allowances, however, not all parents possess sufficient functional literacy to do this. Policies are often based on a rational perspective on behaviour, which assumes people act rationally, while a realistic perspective on behaviour assumes that people do not always act rationally, e.g. due to stress, or because they lack certain capacities and/or skills, such as functional literacy (Bovens et al., 2017). Creating policies based on a realistic perspective on behaviour might make it easier for people to organize aspects of their life self-sufficiently. Finally, including a diverse group of people in decision making, such as people with a lower IQ, can lead to more accessible policies (Alders, 2020).

Despite its limitations, this study is of societal and scientific value, as these findings might be generalizable to similar issues. First, the measure for functional literacy has been proven reliable and internally consistent, as it was created using qualitative cognitive pre-testing, and then tested using a PCA and reliability analysis. This measure focusses on childcare allowances, however, minor changes might make this measure applicable to assess functional literacy in other contexts as well.

Concluding, despite the fact that digital literacy was not a significant predictor of perceived access to childcare allowances, this study raises an important issue concerning the accessibility of E-government services. Digitalization is a trend that will likely increase rapidly in the future, emphasizing the importance of digital and functional literacy for societal participation (Kinnunen et al., 2019). In this development, the accessibility of government services for people with lower digital and functional literacy should be safeguarded, otherwise risking exacerbating social inequalities along the lines of class and gender (Bonacin, Melo & Baranauskas, 2010).

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Appendix A. Assessment of ethical aspects of proposed master thesis research

Provide a short assessment of ethical aspects of the proposed research for your master's thesis. All students discuss this assessment of ethical aspects of the master thesis research with their master thesis supervisors.

For students who are undertaking a Research Internship and Thesis only: your supervisor will submit this assessment form to the ISS Ethics Advisory Committee (IEAC). You may not start the proposed research before the IEAC has advised positively.

1. Provide a short summary of the background and research question/s

This research is part of the ERC project CAPABLE, a research project that focusses on policies and work-life balance in a couple of European countries. This means that this study will work according to the guidelines that were set up for the entire ERC project. This thesis will focus on parents' childcare capabilities in the Netherlands. Their capabilities to arrange childcare and other valued activities can be affected by various factors, like quality, accessibility and affordability. (Perceived) access to childcare and childcare allowance might be of fundamental importance to assess how childcare capabilities are shaped. This research will focus on parents' perceived access to childcare allowances, and how this is affected by functional and digital literacy, given that previous research has shown parents consider applying for childcare allowances complex. Parents need to be literate, know how the Dutch system operates, and also have a substantial degree of digital literacy, as the application is an online process. This way, the digitalization of government services can lower perceived access to childcare allowances, which could create inequality among parents who perceive to have lower access and those who perceive having access. The capability approach will be used, as it is very suitable for this type of research, given that its roots are in research on equality and social justice.

RQ: How do functional and digital literacy affect parents' perceived access to childcare allowances?

2. Provide a short description of the intended research population/s

Parents (both in a couple) engaged in employment (or who were engaged in employment in the last 6 months), education or a reintegration project, whose children are 12 years or younger.

3. Provide a short description of the proposed research design and method/s.

- First, a qualitative pre-testing research will be conducted, in which qualitative interviews will be held in order to assess which competencies are necessary to apply for childcare allowances. The aim is to conduct about 2-3 interviews, as it is expected that saturation will be achieved after a small sample of interviews. These interviews will be used to create the quantitative survey, as this will increase the internal validity of this research.
- A web-based quantitative survey that will take approximately 5-10 minutes will be used to gather demographic data, data on functional and digital literacy, and data in relation to access to and use of childcare allowances and formal childcare.

4. Provide a short description of the recruitment strategy/ies:

a. How will potential participants be identified?

b. How will potential participants be approached for participation in the research?

a. Participants can be identified by 1) having a child of 12 years or younger, and 2) being engaged in employment (or who were engaged in employment in the last 6 months), education or a reintegration project (both parents if in a couple)

b. Respondents for the qualitative pre-testing will either be approached through snowball-sampling, or through an organization that focusses on language and digital skills, the *digitaalhuis*. Respondents for the quantitative research will be approached partly online, e.g. through social media. In order to ensure wider group of respondents, including those who are not active online, participants will also be approached through an interest organization. The Dutch foundation of working parents (*Stichting voor Werkende Ouders)* promised their support in an effort to gather respondents for this research. Where necessary, snowball-sampling through students' and research teams' networks will be used to recruit difficult to reach populations, like lower educated parents. In addition to the organizations previously mentioned, other organizations might be approached to ask for their help in gathering a diverse group of respondents. Examples of these organizations are parent-child centres (*ouder-kind centra)*, the Dutch association of midwives (*De Nederlandse vereniging voor verloskundigen)* and possible other organizations. For participants, it is important to emphasize that participation is always voluntary, and to make sure that participants are always informed about the scope of this study and their rights as participants, regardless of how or through which organizations these participants are approached.

5. Provide a short description of any risks involved in the research for participants. Also describe what measures will be taken to limit the risks for participants?

- The qualitative interviews will have to be recorded, which could be considered a risk for participants. This will only happen with their consent, and these interviews will be anonymized after data collection. There is a minor risk that interviewees might experience stress, but this risk will be mitigated by informing participants about the scope of the study prior to participation, so that they are able to determine if they want to participate in the research.
- Regarding the quantitative research, no identifiable variables will be gathered and no personal information is needed for this research, therefore, we expect no privacy risks as data is collected anonymously. There is a very minor risk that some respondents may experience some stress i.r.t. answering questions related to accessing and receiving childcare subsidies. This risk will be mitigated by informing respondents about the research to they can determine whether or not they wish to participate.

6. Provide a short description of how informed consent will be obtained:

a. How will potential participants be informed about the aims and requirements of the research?

b. How will consent for participation in the research be obtained and recorded?

A. A participant information sheet in Dutch will explain to participants the aims and requirements of the research as well as participants rights including anonymity, the right to be forgotten, voluntary participation.

B. Participants will get a statement of informed consent, for them to understand the data that will be gathered and how and with which goal this data will be used. Participants will have to agree on these conditions before they are able to participate.

7. Provide a short description of how the privacy of participants will be protected and how the confidentiality of information obtained will be ensured.

- The interviews will be anonymized within a week after data collection, and the names of respondents will be stored separately from the data, so that data cannot be traced back to individual respondents. In addition to this, the researcher will act in accordance with the guidelines as provided by the VSNU (see point 8).
- Since the survey is anonymous, no data will be collected that can be used to identify participant. This will guarantee privacy of the participants, in addition to that, data will be stored safely and according to the guidelines provided by the VSNU (see point 8).

8. Provide a short description of who will have access to the data, where and how data will be stored during and after the process of data collection and when and how data will be destroyed.

Data storage

Storage of all data (survey, document analysis, interviews, focus groups and expert questionnaires) will be done via Utrecht University (faculty-based) Data Management Support, which ensures safe data storage.

For the duration of the project, conform to faculty protocols, for privacy reasons all data will be stored on two separate local data servers managed by the Faculty of Social and Behavioural Sciences. The first server will be used to store raw data (questionnaires, audio recordings, transcripts). The raw questionnaire data may include personal information such as gender, racial/ethnic background, educational level, self-reported health and subjective wellbeing. The questionnaire data will be pseudonymized by the replacement of directly identifying information, including name, email address and where relevant, phone number, with a confidential case number. The direct identifiers and the linking confidential case number will be kept in separate folders on a second server. Only the principal investigator will have access to the data with the direct identifiers and the linking confidential case number. The audio recordings and transcripts will be pseudonymized and stored on the first server. All processing of data by external parties (translation companies, transcription companies, survey companies) will be regulated via a Processor Agreement with Utrecht University to ensure all data storage and privacy guidelines are met. The Utrecht University model agreement will be used to ensure the company adheres to the privacy, security and infrastructure protocols required by GDPR and UU protocols.

All paper forms (e.g., signed consent forms) will be stored in locked cabinets.

For long-term storage, the data will be stored together with the metadata (creator, place, date, keywords, subsidiser) and other relevant documentation as a read.me (.txt) file and stored as a package for the long-term for safekeeping and potential sharing (i.e., at least 10 years) commencing from the date that the research results are published. These storage guidelines are in accordance with guidelines by the Association of Universities in the Netherlands (VSNU).

For the duration of the project and for a further 10 years following publication of the research results, data will be stored in the preferred formats mentioned below on a secure storage location that has the following characteristics: the data package is stored in multiple copies on at least two physically distinct locations, is regularly checked for integrity, and the storage medium is renewed before the expiration date.

Data stored on the local data servers managed by the Faculty of Social and Behavioural Sciences are not accessible by third parties. To comply with the requirement of FAIR data storage and ensure sustainable access to the data, at the end of the project, all datasets (excluding privacy-sensitive (i.e. identifying) information and the audio transcripts) will be deposited in EASY, the online public archiving system of

Data Archiving and Networked Services (DANS, the Royal Netherlands Academy of Arts and Sciences institute for permanent access to digital research resources). The audio files from the interviews and focus groups are excluded from archiving because the transcripts provide the same information but require significantly less space for long-term storage. The questionnaires (survey) are pooled as an aggregate dataset, but the expert questionnaires will not be aggregated. EASY will automatically assign DOIs to the datasets upon deposition.

Access to data

The researcher and other researchers associated with the ERC project CAPABLE will have access to the data. Only the researcher for this thesis and the PI in the CAPABLE project will have access to both anonymized and identifiable data, other researchers will only have access to anonymized data. In addition to that, after the datasets have been deposited in the EASY online public archiving system, they will be made accessible as open access for registered users, except for the following components:

- Transcripts from the focus groups and interviews will be available through restricted access. The full pseudonymization of transcripts is difficult. While all steps will be taken to ensure pseudonymization, access to the transcripts will be restricted to ensure GDPR compliance.
- Privacy-sensitive (i.e. identifying) information will be excluded from the archive, compliant with GDPR requirements.
- The audio files from the interviews and focus groups are also excluded from archiving because the transcripts provide the same information but require significantly less space for long-term storage.

To access the open data, users must register with DANS. Conform to DANS regulations, the metadata of the datasets will be available as Creative Commons Zero Waiver (CC0). The datasets themselves will be available as Creative Commons Attribution License (CC-BY). To gain access to the restricted transcripts from the focus groups and interviews, prior permission must be obtained from the depositor, i.e., the principal investigator, through a digital request permission form within the dataset. In order for the researchers in the project to have sufficient time to research the data and publish before the data become publicly accessible, an embargo on reuse will be placed on the data for 2 years following deposition in the archive, which will take place after project completion (30 November 2023). The data will thus be available from 1 December 2025 onwards. Data archived within the EASY archiving system will be stored in formats that ensure long-term guarantees in terms of usability, accessibility and sustainability. Therefore no technical difficulties are expected with regard to accessing the data. No software tools or methods are provided.

Appendix B. [6]Interview guide

Techniques Cognitive Qualitative pre-testing

➔ **Think aloud technique**
- Comprehension probe (do I understand that you…?)
- General/elaborative probe (could you elaborate on that please?...)

- Explanation about the interview/ the goal of the interview
- Explaining participants' rights, anonymity (emphasize that respondent should use as little as possible personal details to safeguard privacy).

<u>Process of applying for childcare allowances</u>

➔ Use the think-aloud probe for the first questions and explain: the idea is that you think aloud while going through all of the steps in the childcare allowances application procedure .

→ Could you walk me through the process of applying for childcare allowances, if you were to go through it step-by-step? (Use website of the Dutch Tax Office for these steps).

→ What steps are necessary for people to go through when applying for childcare allowances?

- Are these steps easy/self-explanatory? What steps do people struggle with and why?
- Looking at these steps, what skills do people need to complete them?

→ During the application procedure, did you have any questions or insecurities?

- How did you solve these?
- Where did you find information?

→ What are problems or barriers that you experiences during the application procedure?

- Trial-and-error or did you have a specific preparation before starting?
- What type of preparations did you do?

→ Did you ask anyone for help?

- If yes, how did you reach out to this person?
- How did you experience this help?
- What problems did you (or other parents) encounter during this procedure?

→ How did you experience this procedure?

- Has your experience with this procedure changed/affected your opinion on formal childcare?
- Has this also expected your use of formal childcare? For you or other parents?

→ DV: "do you think applying for childcare allowances is complicated?", does this require anything else, or is there a better way to measure perceived access to childcare allowances?

➔ Open ending: do you want to add anything else you consider to be important, that I did not ask? Or do you have any specific questions?

[6] The interview guide used during the interviews was in Dutch. This is an English translation.

Appendix C. Survey

Door het corona-virus is dit gebruik mogelijk anders voor u. Daarom vragen we naar de situatie **voor de Corona-crisis.**

1. Gebruikt u kinderopvang? Let op: dit onderzoek vraagt alleen naar formele opvang: kinderdagverblijven, BSO's, gastouderverblijven en peuterspeelzalen.

- o Ja, ik gebruikte kinderopvang
- o Nee, maar ik heb eerder wel kinderopvang gebruikt
- o Nee, ik heb nog nooit kinderopvang gebruikt

2. Waarom gebruikt u geen kinderopvang (meer)? (Meerdere antwoorden mogelijk)

- ☐ Ik maak geen gebruik van kinderopvang door mijn/mijn partner's werksituatie
- ☐ Mijn kinderen hebben geen opvang meer nodig
- ☐ Ik ben niet tevreden over de kwaliteit van kinderopvang
- ☐ Ik wil geen gebruik (meer) maken van kinderopvang door de onzekerheid met toeslagen
- ☐ Ik ben afgeschrikt door verhalen van andere ouders/uit de media
- ☐ Er is geen kinderopvanglocatie in de buurt
- ☐ De opvanguren sluiten niet aan bij mijn/onze werkuren
- ☐ Ik wil de zorg graag zelf regelen met ouders/grootouders
- ☐ Ik maak gebruik van een nanny/au pair
- ☐ Anders, namelijk _____

3. Ontvangt u kinderopvangtoeslag?

- o Ja, ik ontvang kinderopvangtoeslag
- o Nee, maar ik heb eerder wel kinderopvangtoeslag ontvangen
- o Nee, ik heb nog nooit kinderopvangtoeslag ontvangen

4. Waarom ontvangt u geen kinderopvangtoeslag (meer)? (Meerdere antwoorden mogelijk)

- ☐ Ik weet niet van het bestaan van kinderopvangtoeslag
- ☐ Mijn inkomen is te hoog; ik heb hier geen recht op
- ☐ Ik wil geen kinderopvangtoeslag ontvangen door de onzekerheid van toeslagen
- ☐ Ik heb het geprobeerd, maar vond de aanvraag te ingewikkeld
- ☐ Anders, namelijk: _____

5. Heeft u hulp gehad bij het aanvragen van kinderopvangtoeslag?

- o Nee, ik heb dit zelfstandig gedaan
- o Nee ik heb dit gedaan samen met de andere ouder/mijn partner
- o Ja, van familie/vrienden/kennissen
- o Ja, van de kinderopvang organisatie
- o Ja, van sociaal/maatschappelijke hulpverlening
- o Ja, van iemand anders, namelijk: _____

6. Heeft u ooit teveel of juist te weinig kinderopvangtoeslag ontvangen, waardoor u moest bijbetalen of geld terugkreeg?

- Ja, ik heb terug moeten betalen
- Ja, ik heb geld teruggekregen
- Ja, ik heb zowel geld terug gekregen als geld terug moeten betalen
- Nee, mijn kinderopvangtoeslag klopte altijd
- Weet ik niet, ik heb hier nog geen bericht over gehad

7. Weet u wat er mis is gegaan in uw aanvraag waardoor u teveel/te weinig kinderopvangtoeslag heeft ontvangen?

- Ja, ik weet wat er mis is gegaan, en kan dit in de toekomst voorkomen
- Ja, ik weet wat er mis is gegaan, maar ik weet niet hoe ik dit in de toekomst kan voorkomen
- Nee, ik weet niet wat er mis is gegaan

8. Kunt u kort beschrijven wat er mis is gegaan bij uw aanvraag van kinderopvangtoeslag?

9. Kinderopvangtoeslag moet u online aanvragen. Wij willen daarom meer weten over uw digitale vaardigheden. Beantwoord deze vraag alstublieft zo eerlijk mogelijk.

Vink de taken aan die u de **afgelopen 3 maanden** zelfstandig heeft uitgevoerd:

- ☐ Bestanden of mappen kopiëren of verplaatsen
- ☐ Bestanden opslaan op een online opslaglocatie
- ☐ Online informatie vinden op een overheidswebsite
- ☐ Online informatie vinden over goederen en diensten
- ☐ Online informatie vinden over gezondheid
- ☐ E-mail ontvangen en verzenden
- ☐ Deelnemen aan online sociale netwerken
- ☐ Videobellen of bellen via het internet
- ☐ Zelfgemaakte inhoud uploaden en delen op een website

10. Vink de taken aan die u de afgelopen 3 maanden zelfstandig heeft uitgevoerd:

- ☐ Bestanden overzetten tussen verschillende toestellen
- ☐ Software en applicaties (apps) installeren
- ☐ De instellingen van software aanpassen, inclusief het besturingssysteem of beveiligingsprogramma's
- ☐ Iets online kopen
- ☐ Iets online verkopen
- ☐ Online leermiddelen gebruiken
- ☐ Internetbankieren

[7]11. Geef aan in hoeverre u het eens bent met de volgende stellingen. Beantwoord deze vraag alstublieft zo eerlijk mogelijk.

*Deze stellingen zijn ontleend aan Stichting Lezen en Schrijven, en mogen niet zonder toestemming van de stichting gebruikt worden.

[7] These statements could not be included in the report due to copyrights by Stichting Lezen en Schrijven. For these statements, please refer to Greef, Van Deursen and Tubbing (2013).

[8]12. Geef aan in hoeverre u het eens bent met de volgende stellingen. Beantwoord deze vraag alstublieft zo eerlijk mogelijk.

	Helemaal mee oneens 0 1 2 3 4 5 6 7 8 9 10 Helemaal mee eens
Ik open en lees mijn post altijd op de dag dat ik het ontvang	
Ik bewaar belangrijke documenten op een geordende wijze	
Ik ben een goed georganiseerd persoon	
Ik kan goed en nauwkeurig werken met cijfers	
Ik kan gemakkelijk werken met DigiD	
Ik begrijp hoe het systeem van kinderopvangtoeslag werkt	
Veranderingen in mijn werk en inkomen geef ik direct aan bij de belastingdienst	
Ik ben goed op de hoogte van mijn financiën	
Wanneer iets fout gaat, heb ik dat op tijd door en herstel ik dat direct	

12. Geef aan in hoeverre u het eens bent met de volgende stelling?

	Heel erg mee oneens	Mee oneens	Een beetje mee oneens	Niet mee eens, niet mee oneens	Een beetje mee eens	Mee oneens	Heel erg mee eens
Ik vind kinderopvangtoeslag aanvragen ingewikkeld	O	O	O	O	O	O	O
Ik vind de kinderopvangtoeslag toegankelijk voor alle ouders	O	O	O	O	O	O	O

13. Wat maakt kinderopvangtoeslag minder toegankelijk? (Meerdere antwoorden mogelijk). U kunt deze vraag open laten als het met geen van deze antwoorden eens bent.

☐ Het online aanvragen

[8] The English translation of this measurement is discussed in the PCA, see appendix F, table 5.

- ☐ Er worden veel verschillende termen gebruikt
- ☐ Er is veel informatie voor nodig
- ☐ De Nederlandse taal
- ☐ Het is veel werk
- ☐ Ik ben bang om fouten te maken
- ☐ De verhalen over fraude schrikken mij af
- ☐ Het schatten van het jaarinkomen
- ☐ Anders, namelijk: _____

14. Bent u een man of een vrouw?

- o Man
- o Vrouw
- o Anders

15. Wat is uw leeftijd? _____

16. In welk land bent u geboren?

- o Nederland
- o Turkije
- o Marokko
- o Suriname
- o De Antillen
- o Anders, namelijk: _____

17. En identificeert u zich als Nederlands of iets anders?

- o Nederlands
- o Turks
- o Marokkaans
- o Surinaams
- o Antilleaans
- o Anders, namelijk: _____

18. Wat is uw hoogst voltooide opleiding?

- o Geen onderwijs, basisonderwijs, cursus inburgering, lbo, vbo
- o Vmbo kader- of beroepsgerichte leerweg, mbo 1 (assistentenopleiding)
- o Vmbo theoretische of gemengde leerweg, mbo 2, 3, 4 (basisberoeps-, vak-, middenkader- of specialistenopleiding)
- o Mavo, havo of vwo, ulo, mulo, voortgezet speciaal onderwijs
- o Hbo, wo, postdoctoraal onderwijs

Beantwoord de volgende vragen a.u.b. op basis van de situatie **voor de Corona-crisis**

19. Welke van de volgende omschrijvingen geeft het beste uw huidige situatie weer?

- o Ik werk in loondienst

- Ik werk als zelfstandige
- Ik volg een re-intregratieproject
- Ik volg een opleiding of inburgeringscursus
- Ik ben (tijdelijk) werkloos

20. Wat voor contract heeft u?

- Een vast contract/contract voor onbepaalde tijd
- Een flexibel contract/contract voor bepaalde tijd
- Een oproep contract (zoals een 0-uren contract of min-max contract)
- Een uitzendovereenkomst

21. Hoeveel uur werkt u per week volgens uw contract?

- Een vast aantal uren, namelijk: _____
- Geen vast aantal uren

22. Wat is uw netto gezinsinkomen per maand?
Toelichting: Wij bedoelen het netto inkomen van uzelf en uw eventuele partner. Netto is het bedrag dat u (samen) schoon in handen krijgt.

- Minder dan 1500 Euro per maand
- Tussen 1500 en 2500 Euro per maand
- Tussen 2500 en 3500 Euro per maand
- Meer dan 3500 Euro per maand
- Weet ik niet/wil ik liever niet zeggen

23. In hoeverre is uw inkomen veranderd of gelijk gebleven sinds u kinderen heeft?

	Compleet gelijk gebleven 0 1 2 3 4 5 6 7 8 9 10 Sterk veranderd
Mijn inkomen is	

Gezien de uitzonderlijke situatie, willen wij u graag nog vragen hoe u de kinderopvang regelt tijdens de corona-crisis.

24. Werken u en uw partner in een cruciaal beroep, waardoor u nog gebruik mocht maken van kinderopvang?

- Ja, wij werken beide in cruciale beroepen
- Ja, alleen ik werk ik een cruciaal beroep
- Ja, alleen mijn partner werkt in een cruciaal beroep
- Nee, wij werken beide niet in een cruciaal beroep

25. Bent u van plan om na de corona-crisis uw gebruik van kinderopvang te veranderen?

- Nee, ik ga evenveel gebruik maken van kinderopvang als voor de corona-crisis
- Ja, ik ga meer gebruik maken van kinderopvang dan voor de corona-crisis
- Ja, ik ga minder gebruik maken van kinderopvang dan voor de corona-crisis

Appendix D. Results from qualitative cognitive pretesting interviews

Codetree

(In)accessibility	Digital skills	DigiD	
	Barriers (for using childcare allowances)	Risk-bearing parents	
		Financial insecurity	
		Issue regarding income	
		Paying back	
		Shame	
		Stress	
		Unclear communication	
		Unclear procedure	
		Unclear system	
		Use of childcare	
	Functional literacy	Keeping up with changes	
		Literacy	Dutch language Comprehensive reading
		Pro-active/anticipating	
		Organizational skills	Opening mail •*Ignorance* •*Postponing help*
		Working meticulously	
		Understanding the system	
	Requesting childcare allowances	Preparation	
		Necessary information	Personal information •*Expected income* •*Working hours* Childcare facility information •*Hourly rate* •*Number of hours childcare*
	Disadvantages	Education	
		Financial issues	
		Ethnicity	
		Social network	
		Uncertain employment conditions	Self-employment

The cognitive qualitative pretesting interviews revealed a number of competencies that were considered essential for accessing childcare allowances. These competencies can be gathered under 5 overarching skills: *working meticulously, understanding the system, anticipating and keeping up with changes* and *organizational skills* and *regular literacy* . In total, nine statements were developed to measure functional literacy, as presented in appendix C and F.

These interviews were primarily used to create a measure for functional literacy. However, to maximise the value of these interviews, additional questions were asked, also in relation to the dependent variable 'perceived access' and other possibly important information, such as different barriers, prerequisites for the application process and disadvantaged groups. This influenced the final survey in a number of ways:

First, another question was added to measure the dependent variable 'perceived access to childcare allowances', which was first measured using the question "do you think applying for childcare allowances is complicated?". The interviews revealed that, even if participants did not think the application process was complicated, they still did not consider childcare allowances accessible. In particular, higher educated parents' perceived access to childcare allowances might be high because they understand the application procedure, even though they can consider the perceived accessibility of childcare allowances low, as they think it may be difficult for others.

Second, when asked which part of the application process made applying for childcare allowances complicated, participants revealed which aspects they or other people struggled with. Some more answer options were included in the question 'what makes childcare allowances less accessible for you', as these were emphasized by interview participants. For example, predicting one's yearly income emerged as a major hindrance, hence this was added as a separate option.

Finally, in addition to the existing question to measure income instability, another question was included to measure income (in)stability over a longer period. The interviews revealed that most parents base their predicted income on their yearly income of the past year. Given the life changes associated with having a child, one cannot assume that income stays relatively stable; for example, parents might choose to reduce their working hours, which would result in a change in income. Therefore, the question was added: "To what extent has your income remained stable or changed, since you had children?".

Appendix E. Descriptive statistics

Table 4

Descriptive statistics on variables used in the analysis: percentages, means, standard deviations and range (N=124)

Variable	*Mean or %*	*Std. Dev.*	*Range or N*
Age	36	6,61	23-73
Gender – Female	80.6%		(N=100)
Male	18.5%		(N=23)
[9]Educational level – low	2.4%		(N=3)
Medium	20%		(N=25)
high	77.6%		(N=96)
[10]Weighted statistics			
Self-identified nationality – Dutch	96.5%		(N=120)
Other	3.5%		(N=4)
Country of birth – the Netherlands	84.4%		(N=105)
Other	15.3%		(N=19)
Income - <1500	2.1%		(N=3)
1500-2500	18.9%		(N=24)
2500-3500	12.7%		(N=16)
>3500	61.7%		(N=77)
Employment – Paid employment	70.5%		(N=88)
Self-employment	16.3%		(N=20)
In education/a reintegration-project	1.4%		(N=2)
Temporarily unemployed	11.1%		(N=14)
Contract type – Permanent contract	84.5%		(N=74)
Temporary contract	15.5%		(N=14)

[9] Because of the low representation of lower-educated parents, this group was merged with intermediate-educated parents for the analyses. Other categories were merges as well, such as income categories <1500 and 1500-2500, employment status self-employed, in education/reintegration project and temporarily unemployed, and contract types other than permanent contract.

[10]As higher-educated individuals were strongly overrepresented, these statistics are weighted to better resemble the Dutch population, based on data by the SCP (2018).

Changes in income	5.70	2.77	1-10
Contractual working hours	28.47	6.86	8-40
Use of formal childcare	73.3%		(N=91)
Previous use of formal childcare	21.7%		(N=27)
No use of formal childcare	5%		(N=5)
Use of childcare allowances	61.9%		(N=77)
Previous use of childcare allowances	29.6%		(N=37)
No use of childcare allowances	8.5%		(N=11)
Total functional literacy score	166.90	25.98	79-200
Score for regular literacy	102.71	14.58	11-110
Score for functional literacy	64.19	19.08	9-90
Total digital literacy score	11.89	3.76	5-16
Digital communication skills	3.13	0.85	1-4
Digital informational skills	3.84	1.51	1-5
Digital problem solving skills	5.27	1.54	2-7
Perceived access to childcare allowances	4.91	1.73	1-7
Perceived accessibility of childcare allowances (general)	3.42	1.82	1-7
Correct amount of childcare allowances received	24.8%		(N=28)
Received too much – pay back some of the money	25.1%		(N=29)
Received too little – get back some of the money	11.5%		(N=13)
Received both too much and too little	27.1%		(N=31)
Both parents working in ‘essential occupation’	34.8%		(N=43)
One parent working in ‘essential occupation’	23.9%		(N=30)
No parent working in ‘essential occupation’	41.3%		(N=51)
No change in use formal childcare after Corona-crisis	89.4%		(N=111)
Expected increase in use formal childcare	2.5%		(N=3)
Expected decrease in use formal childcare	8.1%		(N=10)

Appendix F. Results from Principle Component Analyses

The principal component analyses were conducted using direct Oblimin rotation, as factors were expected to correlate to some degree. In addition to sample size and normality, other data assumptions state that there should be a linear relationship between the variables, and there should be no multicollinearity (Field, 2013). The assumption of sample size, which for PCA should be at least 100 cases, was met. However, for both functional and regular literacy, the assumption of normality was violated, as histograms indicated skewed data. This can be explained by the underrepresentation of parents with lower (functional) literacy.

For functional literacy, multicollinearity was not an issue. The KMO value was .888, and Bartlett's test was significant ($p<.000$), meaning the data were suitable for analysis. One factor was extracted, that accounted for 65.7% of variance. A reliability analysis revealed a Cronbach's alpha of .932 for the functional literacy measure, meaning the measure can be considered reliable. Table 5 shows the factor loadings for the items for functional literacy.

For regular literacy, Bartlett's test was significant ($p<.000$), and the KMO value was .891, however, multicollinearity was an issue, violating the assumption of additivity. One factor was extracted, which accounted for 72.8% of variance. The reliability analysis computed a Cronbach's alpha of .948, meaning the measure can be considered reliable. Table 6 shows the factor loadings for the items for regular literacy.

Table 5

Factor Structure of the 9-Item Functional Literacy Questionnaire

Item		Loadings
		Factor 1
1.	I always open and read my mail the day I receive it.	.889
2.	I keep important documents in an organized manner.	.853
3.	I am a very organized person.	.841
4.	I am good at working meticulously with numbers.	.820
5.	I can work with DigiD easily.	.816
6.	I understand how the system of childcare allowances works.	.795
7.	When my work and income change, I immediately register this with the Tax Authority.	.794
8.	I am well-informed about my finances.	.771
9.	When something goes wrong, I notice this in due time and fix this immediately.	.700

Table 6

Factor Structure of the 11-Item Literacy Questionnaire

Item	Loadings Factor 1
1. Statement 1 (statements could not be included in the final rapport)	.947
2. Statement 2	.936
3. Statement 3	.932
4. Statement 4	.921
5. Statement 5	.921
6. Statement 6	.920
7. Statement 7	.799
8. Statement 8	.797
9. Statement 9	.787
10. Statement 10	.753
11. Statement 11	.605

Appendix G. Correlation matrix (pearson correlation)

Table 7

Correlation matrix (pearson correlation) of predictors

	1	2	3	4	5	6	7	8
1. Age								
2. Gender	-.082							
3. Educational level	.122	-.021						
4. Income	.204	-.152	.265**					
5. Country of birth	.306**	.060	-.029	.047				
6. Self-ID ethnicity	.273**	.108	.054	-.009	.421**			
7. Employment status	.095	.044	-.129	-.383**	.039	.054		
8. Contract type	-.016	-.026	.017	-.289**	.022	.012	[c]	
9. Change in income	.014	.034	-.005	-.151	.052	-.001	.063	.070

Note. N=124 for all categories except for income (N=117) and contract (N=106). no univariate outliers were excluded for this table.

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

c. Cannot be computed because at least one of the variables is a constant. This is a result of the logic used in the survey; those with a score of anything other than 1 (paid employment) on 7 (employment status) skipped question 8 (contract type), which makes computing a correlation between these impossible.

Appendix H. Data analysis syntax

```
*Missing value analysis based on trend.

RECODE Q4.1_1 Q4.1_3 Q4.1_2 Q4.1_4 Q4.1_5 Q4.1_6 Q4.1_7 Q4.1_8 Q4.1_9 Q4.1_10 Q4.1_11
(1=10) (2=9) (3=8) (4=7) (5=6) (6=5) (7=4) (8=3) (9=2) (10=1) INTO Q4.1_1R Q4.1_3R Q4.1_2R
Q4.1_4R Q4.1_5R Q4.1_6R Q4.1_7R Q4.1_8R Q4.1_9R Q4.1_10R Q4.1_11R.

VARIABLE LABELS  Q4.1_1R 'Reverse statement 1 literacy' /Q4.1_3R 'Reverse statement 3 literacy'
   /Q4.1_2R 'Reverse statement 2 literacy' /Q4.1_4R 'Reverse statement 4 literacy' /Q4.1_5R
   'Reverse statement 5 literacy' /Q4.1_6R 'Reverse statement 6 literacy' /Q4.1_7R 'Reverse '+
   'statement 7 literacy' /Q4.1_8R 'Reverse statement 8 literacy' /Q4.1_9R 'Reverse statement 9 '+
   'literacy' /Q4.1_10R 'Reverse statement 10 literacy' /Q4.1_11R ‘Reverse statement 11 literacy’.
EXECUTE.

RMV /Q4.1_1R_1=TREND(Q4.1_1R) /Q4.1_3R_1=TREND(Q4.1_3R)
/Q4.1_2R_1=TREND(Q4.1_2R)
   /Q4.1_4R_1=TREND(Q4.1_4R) /Q4.1_5R_1=TREND(Q4.1_5R) /Q4.1_6R_1=TREND(Q4.1_6R)
   /Q4.1_7R_1=TREND(Q4.1_7R) /Q4.1_8R_1=TREND(Q4.1_8R) /Q4.1_9R_1=TREND(Q4.1_9R)
   /Q4.1_10R_1=TREND(Q4.1_10R) /Q4.1_11R_1=TREND(Q4.1_11R).

RMV /Q29_1_1=TREND(Q29_1) /Q29_2_1=TREND(Q29_2) /Q29_3_1=TREND(Q29_3)
/Q29_4_1=TREND(Q29_4)
   /Q29_5_1=TREND(Q29_5) /Q29_6_1=TREND(Q29_6) /Q29_7_1=TREND(Q29_7)
/Q29_8_1=TREND(Q29_8)
   /Q29_9_1=TREND(Q29_9).

*Creating total scores, dummy variables etc.

COMPUTE RegularLit=Q4.1_1R_1 + Q4.1_2R_1 + Q4.1_3R_1 + Q4.1_4R_1 + Q4.1_5R_1 +
Q4.1_6R_1 + Q4.1_7R_1 + Q4.1_8R_1 + Q4.1_9R_1 + Q4.1_10R_1 + Q4.1_11R_1.
VARIABLE LABELS  RegularLit 'score for regular literacy'.
EXECUTE.

COMPUTE FunctionalLit=Q29_9_1 + Q29_8_1 + Q29_7_1 + Q29_6_1 + Q29_5_1 + Q29_4_1 +
Q29_3_1 + Q29_2_1 + Q29_1_1.
VARIABLE LABELS  FunctionalLit 'score for functional literacy'.
```

```
EXECUTE.

COMPUTE TotalFunctLit=FunctionalLit + RegularLit.
VARIABLE LABELS TotalFunctLit ‘Total score functional literacy’.
EXECUTE.

COMPUTE Digcom=sum(Q3.1_6 to Q3.1_9).
VARIABLE LABELS Digcom ‘digital communication skills’.
EXECUTE.

COMPUTE Diginfo=sum(Q3.1_1 to Q3.1_5).
VARIABLE LABELS Diginfo ‘digital informational skills’.
EXECUTE.

COMPUTE Digprobsol=SUM(Q3.2_1 to Q3.2_7).
VARIABLE LABELS  Digprobsol ‘digital problem solving skills'.
EXECUTE.

COMPUTE TotalDigLit=Sum.2 (Diginfo, Digcom, Digprobsol).
VARIABLE LABELS  TotalDiglit 'TotalScoreDigitalLiteracy'.
EXECUTE.

RECODE Q5.1_1 (1=7) (2=6) (3=5) (4=4) (5=3) (6=2) (7=1) INTO PerceivedAccess.
VARIABLE LABELS  PerceivedAccess 'Perceived access to childcare allowances'.
EXECUTE.

RECODE Q6.5 (1=1) (2=1) (3=2) (4=2) (5=3) (6=3) INTO Education.
VARIABLE LABELS Education 'educational levels low, intermediate, high'.
EXECUTE.

RECODE Q6.5 (1=1) (2=1) (3=0) (4=0) (5=0) (6=0) Into DumLowEd.
VARIABLE LABELS DumLowEd 'dummy lower education'.
EXECUTE.

RECODE Q6.5 (1=0) (2=0) (3=1) (4=1) (5=0) (6=0) Into DumMidEd.
```

```
VARIABLE LABELS DumMidEd 'dummy intermediate education'.
EXECUTE.

RECODE Q6.5 (1=1) (2=1) (3=1) (4=1) (5=0) (6=0) Into LowMidEd.
VARIABLE LABELS LowMidEd 'dummy lower and intermediate education'.
EXECUTE.

RECODE Q6.5 (1=0) (2=0) (3=0) (4=0) (5=1) (6=1) Into HigherEd.
VARIABLE LABELS HigherEd 'dummy higher education for mediation analysis'.
EXECUTE.

RECODE Q6.3 (1=0) (2=1) (3=1) (4=1) (5=1) (6=1) INTO COBbinary.
VARIABLE LABELS  COBbinary 'Country of Birth NL or other'.
EXECUTE.

RECODE Q6.4 (1=0) (2=1) (3=1) (4=1) (5=1) (6=1) INTO SelfIDbinary.
VARIABLE LABELS SelfIDbinary 'Self-identified nationality Dutch or other'.
EXECUTE.

RECODE Q6.6 (1=0) (2=1) (3=1) (4=1) (5=1) INTO Employmentbinary.
VARIABLE LABELS Employmentbinary ‘Paid employment or other’.
EXECUTE.

RECODE Q6.7 (1=0) (2=1) (3=1) (4=1) INTO Contractbinary.
VARIABLE LABELS Contractbinary ‘Permanent contract or other’.
EXECUTE.

RECODE Q23_1 (1=1) (2=2) (3=3) (4=4) (5=5) (6=6) (7=7) (8=8) (9=9) (10=10) INTO
ChangeIncome.
VARIABLE LABELS ChangeIncome ‘change in income scale 1-10’.
EXECUTE.

RECODE Q6.9 (1=1) (2=2) (3=3) (4=4) INTO Income.
VARIABLE LABELS Income ‘income 4 categories'.
EXECUTE.
```

```
RECODE Q6.9 (1=1) (2=0) (3=0) (4=0) (5=0) INTO Dum1500.
VARIABLE LABELS Dum1500 'Dummy variable income <1500'.
EXECUTE.

RECODE Q6.9 (1=0) (2=1) (3=0) (4=0) (5=0) INTO Dum1525.
VARIABLE LABELS Dum1525 'Dummy variable income <2500'.
EXECUTE.

RECODE Q6.9 (1=1) (2=1) (3=0) (4=0) (5=0) INTO Dum2500.
VARIABLE LABELS Dum2500 'Dummy variable income <2500'.
EXECUTE.

RECODE Q6.9 (1=0) (2=0) (3=1) (4=0) (5=0) INTO DumMidHighInc.
VARIABLE LABELS  DumMidHighInc 'Dummy variable 2500-3500 income'.
EXECUTE.

RECODE Q6.9 (1=0) (2=0) (3=0) (4=1) (5=0) INTO DumHighInc.
VARIABLE LABELS  DumHighInc 'Dummy variable income >3500'.
EXECUTE.

RECODE Q6.1 (1=1) (2=0) INTO Gender.
VARIABLE LABELS  Gender 'Gender'.
EXECUTE.

*Statistis gender, education and age

FREQUENCIES VARIABLES=Gender Education
  /ORDER=ANALYSIS.

DESCRIPTIVES VARIABLES=Q6.2
  /STATISTICS=MEAN STDDEV MIN MAX.

*Weighting other statistics.
```

```
IF (EDUCATION=1) Weight=12.91.
IF (EDUCATION=2) Weight=1.78.
IF (EDUCATION=3) Weight=.43.
EXECUTE.

WEIGHT BY Weight.

FREQUENCIES VARIABLES=Q6.3 Q6.4 Q6.6 Q6.7 Q6.9 Q26 Q2.2 Q20 Q21 Q22 Q25 Q26.0
  /ORDER=ANALYSIS.

DESCRIPTIVES VARIABLES=Q23_1 RegularLit FunctionalLit TotalFunctlit Digcom Diginfo
Digprobsol totalDigLit PerceivedAccess Q5.1_2 Q6.8
  /STATISTICS=MEAN STDDEV MIN MAX.

WEIGHT OFF.

*Exploring assumtions for PCA and RA functional literacy.

EXAMINE VARIABLES=Q29_1 Q29_2 Q29_3 Q29_4 Q29_5 Q29_6 Q29_7 Q29_8 Q29_9
  /PLOT BOXPLOT HISTOGRAM NPPLOT
  /COMPARE GROUPS
  /STATISTICS NONE
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.

FACTOR
  /VARIABLES Q29_1 Q29_2 Q29_3 Q29_4 Q29_5 Q29_6 Q29_7 Q29_8 Q29_9
  /MISSING LISTWISE
  /ANALYSIS Q29_1 Q29_2 Q29_3 Q29_4 Q29_5 Q29_6 Q29_7 Q29_8 Q29_9
  /PRINT INITIAL CORRELATION SIG DET KMO AIC EXTRACTION ROTATION
  /FORMAT SORT BLANK(.30)
  /PLOT EIGEN
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
```

```
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.

RELIABILITY
  /VARIABLES= Q29_1 Q29_2 Q29_3 Q29_4 Q29_5 Q29_6 Q29_7 Q29_8 Q29_9
  /SCALE('ScaleFunctLit') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE
  /SUMMARY=TOTAL.
```

Exploring assumtions for PCA and RA regular literacy.

```
EXAMINE VARIABLES=Q4.1_1 Q4.1_2 Q4.1_3 Q4.1_4 Q4.1_5 Q4.1_6 Q4.1_7 Q4.1_8 Q4.1_9
Q4.1_10 Q4.1_11
  /PLOT STEMLEAF HISTOGRAM NPPLOT
  /STATISTICS NONE
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.

FACTOR
  /VARIABLES Q4.1_1 Q4.1_2 Q4.1_3 Q4.1_4 Q4.1_5 Q4.1_6 Q4.1_7 Q4.1_8 Q4.1_9 Q4.1_10
Q4.1_11
  /MISSING LISTWISE
  /ANALYSIS Q4.1_1 Q4.1_2 Q4.1_3 Q4.1_4 Q4.1_5 Q4.1_6 Q4.1_7 Q4.1_8 Q4.1_9 Q4.1_10
Q4.1_11
  /PRINT INITIAL CORRELATION SIG DET KMO AIC EXTRACTION ROTATION
  /FORMAT SORT BLANK(.30)
  /PLOT EIGEN
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.
```

```
RELIABILITY
  /VARIABLES= Q4.1_1 Q4.1_2 Q4.1_3 Q4.1_4 Q4.1_5 Q4.1_6 Q4.1_7 Q4.1_8 Q4.1_9 Q4.1_10
Q4.1_11
  /SCALE('ScaleRegLit') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE
  /SUMMARY=TOTAL.

*Checking assumption: outliers for mediators and age.

EXAMINE VARIABLES=TotalDigLit TotalFunctLit FunctionalLit RegularLit Q6.2
  /PLOT BOXPLOT
  /COMPARE VARIABLES
  /STATISTICS NONE
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.

EXAMINE VARIABLES=TotalDigLit
  /PLOT BOXPLOT
  /COMPARE VARIABLES
  /STATISTICS NONE
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.

EXAMINE VARIABLES=TotalFunctlit
  /PLOT BOXPLOT
  /COMPARE VARIABLES
  /STATISTICS NONE
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.
```

```
EXAMINE VARIABLES=FunctionalLit
  /PLOT BOXPLOT
  /COMPARE VARIABLES
  /STATISTICS NONE
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.

EXAMINE VARIABLES=RegularLit
  /PLOT BOXPLOT
  /COMPARE VARIABLES
  /STATISTICS NONE
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.

EXAMINE VARIABLES=Q6.2
  /PLOT BOXPLOT
  /COMPARE VARIABLES
  /STATISTICS NONE
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.

*Checking other assumptions HMR Functional literacy.

IF  ($CASENUM = 100) OutliersFL=1.
IF  ($CASENUM < 100) OutliersFL=0.
IF ($CASENUM > 100) OutliersFL=0.
VARIABLE LABELS  OutliersFL 'outliers functional literacy'.
EXECUTE.

USE ALL.
COMPUTE filter_$=(OutliersFL = 0).
VARIABLE LABELS filter_$ 'OutliersFL = 0 (FILTER)'.
```

```
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA COLLIN TOL ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT FunctionalLit
  /METHOD=ENTER HigherEd
  /METHOD=ENTER DumMidHighInc DumHighInc
  /METHOD=ENTER COBbinary Gender Q6.2
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS NORMPROB(ZRESID).
 /SAVE MAHAL COOK.

FILTER OFF.
USE ALL.
EXECUTE.

*Checking other assumptions HMR Total functional literacy.

IF  ($CASENUM = 100) OutliersTFL=1.
IF  ($CASENUM < 100) OutliersTFL=0.
IF  ($CASENUM = 101) OutliersTFL=0.
IF  ($CASENUM = 102) OutliersTFL=0.
IF ($CASENUM = 103) OutliersTFL=1.
IF ($CASENUM > 103) OutliersTFL=0.
VARIABLE LABELS  OutliersTFL 'outliers Total functional literacy'.
EXECUTE.

USE ALL.
COMPUTE filter_$=(OutliersTFL  = 0).
```

```
VARIABLE LABELS filter_$ 'OutliersTFL  = 0 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA COLLIN TOL ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT TotalFunctLit
  /METHOD=ENTER HigherEd
  /METHOD=ENTER DumMidHighInc DumHighInc
  /METHOD=ENTER COBbinary Gender Q6.2
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS NORMPROB(ZRESID).
 /SAVE MAHAL COOK.

FILTER OFF.
USE ALL.
EXECUTE.

*Checking other assumptions HMR Digital literacy.

IF ($CASENUM > 0) OutliersDL=0.
IF ($CASENUM = 100) OutliersDL=1.
IF  ($CASENUM = 33) OutliersDL=1.
IF ($CASENUM = 50) OutliersDL=1.
VARIABLE LABELS  OutliersDL 'outliers digital literacy'.
EXECUTE.

USE ALL.
COMPUTE filter_$=(OutliersDL = 0).
VARIABLE LABELS filter_$ 'OutliersDL = 0 (FILTER)'.
```

```
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA COLLIN TOL ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT TotalDigLit
  /METHOD=ENTER HigherEd
  /METHOD=ENTER DumMidHighInc DumHighInc
  /METHOD=ENTER COBbinary Gender Q6.2
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS NORMPROB(ZRESID).
 /SAVE MAHAL COOK.

FILTER OFF.
USE ALL.
EXECUTE.

*Checking other assumptions HMR Regular literacy.

IF ($CASENUM > 0) OutliersRL=0.
IF ($CASENUM = 3) OutliersRL=1.
IF ($CASENUM = 10) OutliersRL=1.
IF ($CASENUM = 70) OutliersRL=1.
IF ($CASENUM = 100) OutliersRL=1.
IF ($CASENUM = 103) OutliersRL=1.
IF ($CASENUM = 124) OutliersRL=1.
VARIABLE LABELS  OutliersRL 'outliers regular literacy'.
EXECUTE.

USE ALL.
```

```
COMPUTE filter_$=(OutliersRL = 0).
VARIABLE LABELS filter_$ 'OutliersRL = 0 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA COLLIN TOL ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT RegularLit
  /METHOD=ENTER HigherEd
  /METHOD=ENTER DumMidHighInc DumHighInc
  /METHOD=ENTER COBbinary Gender Q6.2
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS NORMPROB(ZRESID).
 /SAVE MAHAL COOK.

FILTER OFF.
USE ALL.
EXECUTE.

*Checking assumptions for mediation perceived access.

CORRELATIONS
  /VARIABLES=Q6.2 Q6.1 Education Income Q6.3 Q6.4 Q6.6 Q6.7 Q23_1
  /PRINT=TWOTAIL NOSIG
  /MISSING=PAIRWISE.

EXAMINE VARIABLES=PerceivedAccess
  /PLOT BOXPLOT HISTOGRAM NPPLOT
  /COMPARE GROUPS
  /STATISTICS NONE
```

```
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT PerceivedAccess
  /METHOD=ENTER Contractbinary.

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT PerceivedAccess
  /METHOD=ENTER Employmentbinary.

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT PerceivedAccess
  /METHOD=ENTER ChangeIncome.

*Checking assumptions for Model 1 (model with total functional literacy and diglit as mediators).
IF ($CASENUM > 0) OutliersMODEL1=0.
IF ($CASENUM = 33) OutliersMODEL1=1.
IF ($CASENUM = 50) OutliersMODEL1=1.
IF ($CASENUM = 100) OutliersMODEL1=1.
IF ($CASENUM = 103) OutliersMODEL1=1.
EXECUTE.
```

```
USE ALL.
COMPUTE filter_$=(OutliersMODEL1 = 0).
VARIABLE LABELS filter_$ 'OutliersMODEL1 = 0 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

REGRESSION
 /MISSING LISTWISE
 /STATISTICS COEFF OUTS CI(95) R ANOVA COLLIN TOL ZPP
 /CRITERIA=PIN(.05) POUT(.10)
 /NOORIGIN
 /DEPENDENT PerceivedAccess
 /METHOD=ENTER HigherEd
 /METHOD=ENTER TotalDigLit TotalFunctLit Contractbinary Gender Q6.2 COBbinary
DumHighInc
 /SCATTERPLOT=(*ZRESID ,*ZPRED)
 /RESIDUALS NORMPROB(ZRESID)
 /SAVE MAHAL COOK.


Run MATRIX procedure:

*************** PROCESS Procedure for SPSS Version 3.00 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**************************************************************************
Model  : 4
    Y  : Perceive
    X  : HigherEd
   M1  : TotalDig
   M2  : TotalFun

Covariates:
 Gender   DumHighI COBbinar Q6.2     Contract

Sample
Size:  102

**************************************************************************
OUTCOME VARIABLE:
 TotalDig
```

Model Summary

R	R-sq	MSE	F	df1	df2	p
,2895	,0838	5,3386	1,4488	6,0000	95,0000	,2043

Model

	coeff	se	t	p	LLCI	ULCI
constant	15,5781	1,4884	10,4660	,0000	12,6231	18,5330
HigherEd	1,2802	,6196	2,0661	,0415	,0501	2,5103
Gender	-,1883	,6268	-,3004	,7645	-1,4327	1,0561
DumHighI	-,7682	,5618	-1,3674	,1747	-1,8836	,3472
COBbinar	-,0327	1,0261	-,0319	,9746	-2,0697	2,0043
Q6.2	-,0661	,0433	-1,5280	,1298	-,1520	,0198
Contract	,4108	,6203	,6622	,5095	-,8207	1,6422

Covariance matrix of regression parameter estimates:

	constant	HigherEd	Gender	DumHighI	COBbinar	Q6.2	Contract
constant	2,2155	,0403	,1704	-,1278	,3770	-,0595	-,1337
HigherEd	,0403	,3839	,0762	-,1064	-,0081	-,0075	-,0478
Gender	,1704	,0762	,3929	-,0738	-,0038	-,0068	-,0371
DumHighI	-,1278	-,1064	-,0738	,3157	-,0701	-,0003	,0753
COBbinar	,3770	-,0081	-,0038	-,0701	1,0528	-,0102	-,0818
Q6.2	-,0595	-,0075	-,0068	-,0003	-,0102	,0019	,0017
Contract	-,1337	-,0478	-,0371	,0753	-,0818	,0017	,3848

****

OUTCOME VARIABLE:
TotalFun

Model Summary

R	R-sq	MSE	F	df1	df2	p
,2419	,0585	477,0761	,9840	6,0000	95,0000	,4406

Model

	coeff	se	t	p	LLCI	ULCI
constant	199,9386	14,0705	14,2097	,0000	172,0050	227,8722
HigherEd	6,3440	5,8574	1,0831	,2815	-5,2844	17,9725
Gender	,5138	5,9254	,0867	,9311	-11,2496	12,2772
DumHighI	2,2533	5,3112	,4243	,6723	-8,2907	12,7974
COBbinar	8,9410	9,6995	,9218	,3590	-10,3150	28,1970
Q6.2	-,8402	,4089	-2,0547	,0426	-1,6521	-,0284
Contract	-4,8581	5,8639	-,8285	,4095	-16,4995	6,7832

Covariance matrix of regression parameter estimates:

	constant	HigherEd	Gender	DumHighI	COBbinar	Q6.2	Contract
constant	197,9800	3,6048	15,2239	-11,4213	33,6880	-5,3136	-11,9515
HigherEd	3,6048	34,3092	6,8079	-9,5040	-,7237	-,6740	-4,2725
Gender	15,2239	6,8079	35,1103	-6,5924	-,3416	-,6070	-3,3160
DumHighI	-11,4213	-9,5040	-6,5924	28,2085	-6,2623	-,0252	6,7312
COBbinar	33,6880	-,7237	-,3416	-6,2623	94,0807	-,9146	-7,3109
Q6.2	-5,3136	-,6740	-,6070	-,0252	-,9146	,1672	,1523
Contract	-11,9515	-4,2725	-3,3160	6,7312	-7,3109	,1523	34,3854

```
**************************************************************************
OUTCOME VARIABLE:
 Perceive

Model Summary
          R        R-sq         MSE           F         df1         df2           p
      ,4397       ,1933      2,8999      2,7856      8,0000     93,0000       ,0083

Model
              coeff         se          t          p       LLCI       ULCI
constant     3,6582     2,1233     1,7229      ,0882      -,5582     7,8746
HigherEd     -,8836      ,4679    -1,8885      ,0621     -1,8127      ,0455
TotalDig     -,1431      ,0773    -1,8516      ,0673      -,2966      ,0104
TotalFun      ,0228      ,0082     2,7884      ,0064       ,0066      ,0390
Gender        ,0955      ,4622      ,2066      ,8367      -,8224     1,0135
DumHighI     -,3231      ,4193     -,7706      ,4429     -1,1557      ,5095
COBbinar     -,4628      ,7598     -,6091      ,5440     -1,9716     1,0461
Q6.2         -,0068      ,0328     -,2078      ,8358      -,0719      ,0583
Contract     -,8158      ,4606    -1,7713      ,0798     -1,7304      ,0988

Covariance matrix of regression parameter estimates:
            constant   HigherEd   TotalDig   TotalFun     Gender   DumHighI
COBbinar       Q6.2   Contract
constant     4,5083      ,1793     -,0668     -,0113      ,0858     -,0952
,3038     -,0462     -,1002
HigherEd      ,1793      ,2189     -,0068     -,0003      ,0402     -,0624     -
,0023     -,0048     -,0244
TotalDig     -,0668     -,0068      ,0060     -,0001      ,0012      ,0049
,0014      ,0003     -,0031
TotalFun     -,0113     -,0003     -,0001      ,0001     -,0001     -,0003     -
,0006      ,0000      ,0004
Gender        ,0858      ,0402      ,0012     -,0001      ,2137     -,0390     -
,0015     -,0037     -,0209
DumHighI     -,0952     -,0624      ,0049     -,0003     -,0390      ,1758     -
,0357      ,0000      ,0377
COBbinar      ,3038     -,0023      ,0014     -,0006     -,0015     -,0357
,5773     -,0060     -,0479
Q6.2         -,0462     -,0048      ,0003      ,0000     -,0037      ,0000     -
,0060      ,0011      ,0010
Contract     -,1002     -,0244     -,0031      ,0004     -,0209      ,0377     -
,0479      ,0010      ,2121

************************** TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 Perceive

Model Summary
          R        R-sq         MSE           F         df1         df2           p
      ,3335       ,1112      3,1278      1,9808      6,0000     95,0000       ,0760

Model
              coeff         se          t          p       LLCI       ULCI
constant     5,9876     1,1393     5,2555      ,0000     3,7258     8,2494
HigherEd     -,9221      ,4743    -1,9443      ,0548    -1,8637      ,0194
Gender        ,1342      ,4798      ,2797      ,7803      -,8183     1,0867
DumHighI     -,1618      ,4300     -,3761      ,7076     -1,0155      ,6920
COBbinar     -,2542      ,7854     -,3237      ,7469     -1,8134     1,3050
Q6.2         -,0165      ,0331     -,4987      ,6191      -,0822      ,0492
Contract     -,9854      ,4748    -2,0753      ,0407     -1,9280     -,0428

Covariance matrix of regression parameter estimates:
            constant   HigherEd     Gender   DumHighI   COBbinar       Q6.2
Contract
constant     1,2980      ,0236      ,0998     -,0749      ,2209     -,0348     -
,0784
HigherEd      ,0236      ,2249      ,0446     -,0623     -,0047     -,0044     -
,0280
```

```
Gender        ,0998      ,0446      ,2302     -,0432     -,0022     -,0040     -
,0217
DumHighI     -,0749     -,0623     -,0432      ,1849     -,0411     -,0002
,0441
COBbinar      ,2209     -,0047     -,0022     -,0411      ,6168     -,0060     -
,0479
Q6.2         -,0348     -,0044     -,0040     -,0002     -,0060      ,0011
,0010
Contract     -,0784     -,0280     -,0217      ,0441     -,0479      ,0010
,2254

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI       c_ps
     -,9221      ,4743    -1,9443      ,0548    -1,8637      ,0194     -,5069

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI      c'_ps
     -,8836      ,4679    -1,8885      ,0621    -1,8127      ,0455     -,4856

Indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
TOTAL       -,0386      ,2242     -,4661      ,4383
TotalDig    -,1832      ,1377     -,5219      ,0210
TotalFun     ,1447      ,1886     -,1689      ,5845

Partially standardized indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
TOTAL       -,0212      ,1241     -,2619      ,2419
TotalDig    -,1007      ,0768     -,2862      ,0115
TotalFun     ,0795      ,1043     -,0932      ,3249

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

NOTE: Due to estimation problems, some bootstrap samples had to be replaced.
      The number of times this happened was:
       12

NOTE: Variables names longer than eight characters can produce incorrect output.
      Shorter variable names are recommended.

------ END MATRIX -----
```