What is Good for the Goose is Good for the Gander? How gender-specific conceptual frames affect financial participation and decision-making

What is Good for the Goose is Good for the Gander?

How gender-specific conceptual frames affect financial participation and decision-making

Cecilia Boggio[†] Flavia Coda Moscarola[‡] Andrea Gallice[§]

Abstract

We conduct a field experiment with elementary school children to go to the roots of the gender gap in financial participation and decision-making. We study the combined effects of two treatments designed to boost the attention span of participants in completing a basic financial task. We find that the use of gender-specific conceptual frames (competitiveness vs. cooperation) in the description of the task: a) raises girls' interest and thus increases their number of coherent answers; b) makes the transmission of information on the utility of savings more effective in boosting the coherence of girls' answers; c) does not increase girls' level of impatience. This evidence supports our underlying hypothesis that the use of more gender-specific conceptual frames in presenting financial information to women may play a role in narrowing the gender gap in financial market participation and decision-making.

JEL Classification: D03, C93, I2, D9.

Keywords: Financial Inclusion; Gender Gap; Limited Attention; Framing.

[†]University of Turin (ESOMAS Dept.) and CERP-Collegio Carlo Alberto. Corso Unione Sovietica 218bis, 10134 Torino (TO), Italy, e-mail: cecilia.boggio@unito.it, phone: +39 0116705746 (corresponding author).

[‡]CERP-Collegio Carlo Alberto.

[§]University of Turin (ESOMAS Department) and Collegio Carlo Alberto.

1. Introduction

The gender gap in financial participation and decision-making has been extensively documented in the economics, psychology and sociology literature. For instance, it has been demonstrated that women are rarely primary decision-makers when it comes to savings and investment decisions. Fonseca et al. (2012) find that, when talking about making long-term spending and saving plans, 26.2% of women versus 33.8% of men declare that they are the primary decision-makers in their households. Similarly, when talking about tracking investments and insurance coverage, these percentages are 32.8% versus 49.2%. A number of studies highlight some potential determinants of this phenomenon (see Lusardi and Mitchell 2014 for an exhaustive overview). First of all, women are, on average, more risk-averse than men (Kahneman and Tversky 1979; Eckel and Grossman 2002, 2008; Niederle and Vesterlund 2007; Croson and Gneezy 2009; Dohmen et al. 2011). Second, women are on average less financially literate as well as less confident in their own capabilities than men. Evidence that women have lower scores on financial literacy tests than men is found in Lusardi and Mitchell (2008), Guiso et al. (2008), Fornero and Monticone (2011), van Rooij et al. (2011) and Bucher-Koenen et al. (2017), whereas evidence of a gender gap in measured and self-assessed financial literacy is found in Barber and Odean (2001), Eckel and Grossman (2002), van Rooij et al. (2007), Arano et al. (2010), and Mahdavi and Horton (2014).[1] Third, social roles, cultural norms and/or specialization processes inside the family may prevent women from engaging in financial activities (Fonseca et al. 2012; Bucher-Koenen et al. 2017). Finally, Boggio et al. (2018) point out how the language of investor communication, by privileging masculine linguistic domains, may generate in women feelings of unfamiliarity towards this type of specialized discourse (see Gotti 2003, 2011, for a defi-

[1] See Lusardi and Mitchell (2014) for a detailed review about how the patterns of financial literacy are affected by age, sex, education and ability, income and work status, race and ethnicity, and family background.

nition of specialized discourse and an analysis of the features of technical as opposed to common language).

By elaborating on the last point, this article investigates whether gender-specific conceptual frames impact on the level of attention that women and men devote to the completion of a basic financial task aimed at eliciting their time preferences. Limited attention is a well-known behavioral bias that undermines the quality of investors' decisions (Kahneman 1973; Corwin and Coughenour 2008; DellaVigna and Pollet 2009). The present study verifies whether limited attention correlates with the framing of the problem at hand and with the respondents' gender. In particular, we investigate whether the use of gender-specific conceptual frames may spark people's interest in the task they are required to perform, make them focus more on its completion, and improve the consistency of their answers. The task consists in filling out a multiple price list aimed at eliciting individual discount rates (see Coller and Williams 1999 and Harrison et al. 2002 for the basic design and first applications). We choose such a task for a number of reasons. First, it allows to clearly tell apart those who provide coherent answers from those who do not. Second, the relation between intertemporal preferences and interest rates as embedded in a multiple price list task is at the core of basic financial knowledge and it is well-known that the latter correlates positively with financial participation (Guiso and Jappelli 2005; van Rooij et al. 2011). Third, the quality of financial decisions depends heavily on the characteristics of agents' underlying time preferences. If individuals display inconsistent time preferences or fail to elicit them correctly through introspection, they are more likely to incur in bad investment decisions and consequently further limit their participation in financial markets. Indeed, Meier and Sprenger (2013) show that time preferences are highly correlated with financial information acquisition and financial participation. They also use a multiple price list task and report that less patient individuals, and to some extent also those who display inco-

herent time preferences, are less likely to participate to financial education programs and financial markets. Similarly, Jacobson and Petrie (2009) show that inconsistent choices and mistakes correlate with suboptimal behavior in financial decisions.

We run a field experiment aimed at eliciting participants' discount rates and propensity to save. The experiment targets a sample of third and fourth graders (aged 8 and 9) from five different elementary schools in the metropolitan area of Turin, Italy. Why do we target young children? The main reason is that they have been much less exposed than adults to socio-cultural conditioning factors potentially determining the gender gap in financial participation.[2] To be more specific, the choice of age group was dictated by our ambition to go to the roots of the gender gap by minimizing all the potential determinants deriving from socialization, the process by which human infants begin to acquire the skills necessary to perform as functioning members of society (Billingham 2007; Burusic et al. 2012). Inasmuch as socialization is the process through which human beings learn and come to understand the norms and expectations that serve as organizing devices in society, it is also a mean of constructing (stereo)typical social roles with specific capabilities and dispositions, including economic and financial ones.

We use a frame analysis approach to reinforce the theory that during the process of socialization human beings learn to give meaning to reality according to a set of conceptual frames (Goffman 1974). These conceptual frames are not intentional and originate in daily routines and customs without an awareness that they are such, and that they could have been different (Verloo and Lombardo 2007). In other words, they are what Gadamer (1960) defines "prejudices", that is socially constructed cultural filters through which human beings become aware of, understand and interpret reality. Thus it is through concep-

[2]See Lusardi et al. (2010) for evidence of a gender gap in financial literacy among young adults (i.e., college graduates), and Lusardi et al. (2014) for evidence of a gender gap among individuals over the age of 50. In this respect, the fact that our experiment targets Italian pupils is particularly interesting: the 2015 PISA financial literacy assessment (OECD 2017) shows that, out of a sample of 10 OECD countries, Italy is the only one in which boys perform better than girls already at the age of 15.

tual frames that we perceive certain activities, tasks and responsibilities as male or female (see Niederle and Vesterlund 2007 for a discussion of the factors that lead parents, teachers and peers to encourage gender-typed activities in children). Moreover, since language is of fundamental importance in children becoming competent members of society, conceptual frames are produced and reproduced through discursive practices (Fairclough 1992).

In the experiment, we study the (combined) effects of two different treatments designed to boost the attention span of participants and henceforth referred to as the "Framing Treatment" and the "Workshop Treatment". The first treatment (the Framing Treatment) is based on economic, psychological and linguistic studies that rely on "framing theory" (e.g. Goffman 1974; Tversky and Kahneman 1981; Tannen 1993; Lakoff 1996; Fillmore and Baker 2009) and is characterized by its intuitiveness and gender-specificity. The treatment exerts leverage on an instinctive reaction in that it arouses the interest of participants by suggesting some possible uses for the prizes (colorful balloons) that they may win by completing a certain task.[3] More specifically, we exploit the well-documented (stereo)typical conceptual dichotomy of competitive men and cooperative women (Akerlof and Kranton 2000; Niederle and Vesterlund 2007; Eckert 2013; Buser et al. 2014). Evolutionary psychologists and experimental economists have both demonstrated that, from an early age, boys spend more time at competitive games than girls, whereas girls often select games that have no clear end point or no winner (Niederle and Vesterlund 2007; Buser et al. 2014; Niederle 2014). This means that these two opposite conceptual frames, i.e. competitive men vs. cooperative women, come into play in the process of socialization at an early stage. In line with this hypothesis, we ask the children to complete a standard task aimed at eliciting their time preferences (see Bettinger and Slonim 2007; Andersen et al. 2008; Castillo et al.

[3]See Chang and Burns (2005) for a discussion of children's motivation in relation to attention skills, and Kahneman (1973) who postulates that the amount of attention capacity depends on the individual's level of arousal.

2011; Sutter et al. 2013; Alan and Ertac 2018). The task instructions are not difficult to understand – third and fourth graders already have enough cognitive abilities to comprehend them – but the task requires them to concentrate long enough to provide answers that are consistent (i.e., non-contradictory). To possibly impact on the children's attentiveness in completing it, we use three alternative conceptual frames. The first focuses on competitiveness and physical abilities, thus emphasizing (stereo)typical masculine characteristics. The second focuses on cooperation and empathy, thus emphasizing (stereo)typical feminine characteristics. The third is neutral, and uses no gender-specific connotation. Most importantly, in our experiment framing does not affect the description of the task per se, but rather the description of its outcome. On this, we elaborate on the insights of Becker and Mulligan (1997), who state that inducing people to think about the utility that derives from future consumption encourages them to become more patient, and Zhao et al. (2007), who instead demonstrate that mentally simulating the future outcome improves the consistency of agents' preferences.

The second treatment (the Workshop Treatment) consists in exposing participants to a one-hour workshop on the utility of saving. The workshop attracts the children's attention through a set of recreational and educational activities aimed at inducing them to think about the benefits of saving more carefully (we discuss the structure of the workshop in more details in Section 2).

In a related paper, Coda Moscarola and Migheli (2017) use the same Workshop Treatment (in isolation) to evaluate whether educational activities of this kind are effective in improving the consistency of children's answers and their level of patience. They show that attending the workshop contributes to increase the number of consistent answers of boys but had no significant effects on girls.[4] These results point to the existence of some

[4]Also the experiment conducted by Coda Moscarola and Migheli (2017) targets third and fourth graders from elementary schools in the Turin area. However, there is no overlapping with the children that partic-

gender differences in the way boys and girls approach and understand simple educational activities of financial literacy. These differences can in turn contribute to create and amplify the diverging patterns that men and women display in terms of financial participation and decision-making. This led us to investigate whether gender-specific conceptual frames impact on the level of attention that children devote to financial literacy activities, and thus ultimately affect their performance and willingness to get engaged. Therefore, we combine the Framing Treatment and the Workshop Treatment to study the intertwined effects of framing and learning.

Overall, we find that the use of gender-specific conceptual frames: a) raises girls' interest and thus increases their number of consistent answers; b) makes the workshop on the utility of saving more effective in boosting the consistency of the answers, once again in particular for girls; and c) does not increase girls' level of impatience. Although our experiment targets elementary school children, we believe the results are relevant also for the adult population. Our aim is to go to the roots of the gender gap in financial participation and decision-making: we show that gender-specific conceptual frames influence the quality of financial decisions even for those who have been much less exposed to socio-cultural conditioning factors. The effects of these factors pile up over time and are likely to lead to long-term consequences. In fact, the literature on long-lasting effects of early life exposures and interventions (see for instance Heckman and Karapakula 2019 and Eisner et al. 2019) testifies the lifetime relevance of socio-emotional skills, attitudes and beliefs that one acquires during childhood. Focusing on financial participation, Lusardi et al. (2010) and Grohmann et al. (2015) show that individuals general attitude towards financial issues is shaped by their childhood experiences. Therefore, and although it is certainly true that

ipated in our study as the two experiments took place in different academic years and involved different schools and classes. Moreover, the two experiments feature different prizes: in Coda Moscarola and Migheli (2017) children win candies; in our experiment, they win balloons. In Section 5, we discuss in greater detail the results reported in Coda Moscarola and Migheli (2017) in light of the ones that we obtain.

financial preferences change with age, the interest that an individual has for these issues or the way he/she approaches financial decisions is much more constant. This suggests that the use of a more gender-specific conceptual frame – one women can identify more with – in presenting financial information can indeed play a role in narrowing the gender gap in financial market participation and decision-making. Van Rooij et al. (2011) show in fact that those who have low financial literacy are significantly less likely to participate to financial markets. Thus, as gender-specific conceptual frames influence women's level of attention and the quality of their choices, they will also impact on their level of participation.

The remaining part of the article is structured as follows. In Section 2, we present our experimental design. In Section 3, we show the descriptive statistics of our sample. In Section 4, we present our empirical strategy. We illustrate and interpret the results in Section 5, and conclude in Section 6.

2. Experimental Design

The experiment involves 251 children from grade 3 and grade 4 (aged 8 and 9) belonging to 12 different classes from 5 different elementary schools located in the metropolitan area of Turin (Italy).[5] The choice of the schools and of the classes is not random. Each year, the *Museo del Risparmio* ("Museum of Saving") *di Torino* – the institution we collaborated with in the design of the experiment – invites third and fourth grade teachers to visit the museum with their students and attend thematic workshops. Teachers receive similar invitations from other sources and must thus choose where to bring their pupils. Our sample consists of *all* the classes who visited the museum in the 2015-2016 academic year. We discuss the

[5]The city of Turin is divided into 8 districts ("circoscrizioni", in Italian). Four of the five schools in the sample are located in districts 3, 7, 8, and 9. The fifth school is located in Moncalieri, a city south of Turin. See Costa et al. (2017) for a detailed description of the socio-economic conditions in the metropolitan area of Turin. See Section 3 for more information on the distribution of population characteristics in our sample. See Appendix A2 for more information on the schools and the classes.

representativeness of the sample in Section 3.

As mentioned in the Introduction, during the experiment, the children are exposed to two treatments: the Framing Treatment, which they repeat twice, and the Workshop Treatment. In the former, the children are asked to perform a standard task aimed at eliciting their time preferences. More precisely, they are asked to complete the Multiple Price List (MPL) task shown in Figure 1.[6]

	Option A	**Option B**	**ANSWER**
	You receive ... tomorrow	You receive ... in 1 month	Do you prefer A or B?
Row 1	10 balloons	11 balloons	
Row 2	10 balloons	12 balloons	
Row 3	10 balloons	13 balloons	
Row 4	10 balloons	14 balloons	
Row 5	10 balloons	15 balloons	
Row 6	10 balloons	16 balloons	
Row 7	10 balloons	17 balloons	
Row 8	10 balloons	18 balloons	
Row 9	10 balloons	19 balloons	
Row 10	10 balloons	20 balloons	

Figure 1: The MPL task.

Children are introduced to the MPL task through the following three alternative conceptual frames (see Appendix A1 for the original Italian texts).[7]

[6] As an incentive, once the children have completed the task, we extract a row number and assign each child the prize corresponding to his/her choice at the appropriate deadline (i.e., the following day in the case of Option A; a month later in the case of Option B). Analogous MPL tasks (and related incentive schemes) are used, among others, in Bettinger and Slonim 2007, Andersen et al. 2008, Castillo et al. 2011, Sutter et al. 2013 and Alan and Ertac 2018.

[7] Edwards et al. (2001) highlight that, despite the fact that children's preferences depend upon inclinations and change over time, and are influenced by many factors (parents, teachers and media advertising, among others), girls like games that include rhythm and singing more than boys do, while boys like competitive games the most. See also Maccoby (1999) for a detailed psychological analysis about boys and girls having different styles of play that are not attractive to each other. See Niederle and Vesterlund (2007), van den Assem et al. (2011) and Molina et al. (2013) for experimental evidence on gender differences in cooperation and competition.

1 - Masculine frame (emphasis on competitiveness and physical abilities).

Up for grabs, a lot of colorful balloons you can use to challenge your friends in exciting games and races. For example, have you ever run a balloon race? You have to be agile, fast and clever. The winner is the first to get to the finish line - but you can only use your nose to move the balloon.

2 - Feminine frame (emphasis on cooperation and empathy).

Up for grabs, a lot of colorful balloons to share with your friends and play fun games with them. For example, have you ever done the back-to-back balloon dance? You have to be willing to share and collaborate. You and your partner have to dance while holding two balloons in between your backs, without letting the balloons fall or using your hands to help you.

3 - Neutral frame.

Up for grabs, a lot of colorful balloons to play fun games with.

The second treatment (the Workshop Treatment) consists in attending a one-hour workshop specifically designed for elementary school children by the *Museo del Risparmio di Torino*. The workshop exposes children to a set of recreational activities aimed at emphasizing the usefulness and benefits of saving. It follows the insights of Becker and Mulligan (1997) who show that stimulating children to imagine their future increases their propensity to save. Children are thus initially asked to think about the utility deriving from something they really like and would love to buy (e.g., a toy). To make this mental exercise effective, they are given sufficient time to think about what they really would like, and then draw the desired object on a piece of paper.[8] The experimenters then invite the children to ponder the fact that to buy their desired object they need money, and tell them that a way to gather the required sum could be doing chores for their parents and/or grandparents in exchange for pocket money. However, as it is not likely that they receive the money

[8]This phase lasts about 15 minutes and experimenters strictly avoid any potential influence on the children's desires.

they need immediately, they will have to wait and save for some time. To reinforce the message, children go through a second game which entails the creation of a small saving plan. They look at a picture of an item (i.e., a camera or a bicycle) with the indication of its market price. Then, they receive a calendar and a €5 or €10 facsimile banknote, as if this amount was their weekly pocket money. However, as a single "instalment" is not enough to buy the item, they realize they need more banknotes. So, they put the first banknote on the first cell of the calendar. Then, they receive a second banknote and put it on the second cell and so on, until they reach the required sum. The number of filled cells thus represents the number of weeks they must save in order to be able to buy the item. To sum up, the first part of the workshop is highly subjective as each child decides his/her own object of desire. The second part is instead more homogeneous. However, as the overall framework of the workshop is quite unstructured, we do not collect or analyze data about its actual implementation. We simply use the children's exposure to the workshop as the treatment. The idea is that a child who attends the workshop gets somehow acquainted with the benefits of saving.

All participants in the experiment go through two repetitions of the Framing Treatment and one repetition of the Workshop Treatment, although in a different order. To clarify this point, let $M1$, $F1$, $N1$, $M0$, $F0$, and $N0$ denote the six subgroups in which we partition the pool of participants. The letter $\{M, F, N\}$ identifies the frame to which the children are exposed in the Framing Treatment (Masculine, Feminine, Neutral).[9] The number $\{1, 0\}$ indicates whether the subgroup belongs to the treatment or the control group with respect to the Workshop Treatment, that is whether participants went through the second repetition of the Framing Treatment after having attended the workshop (1 - treated) or not (0 - control).[10] Figure 2 illustrates the structure of the experiment. It also shows the number of

[9]The frame remains the same in both repetitions of the Framing Treatment.

[10]The subgroups consist of children belonging to different classes from different schools. See Tables 2, 3,

boys and girls in each group. For instance, group $M1$ consists of 65 children, of which 39 are boys and 26 girls.

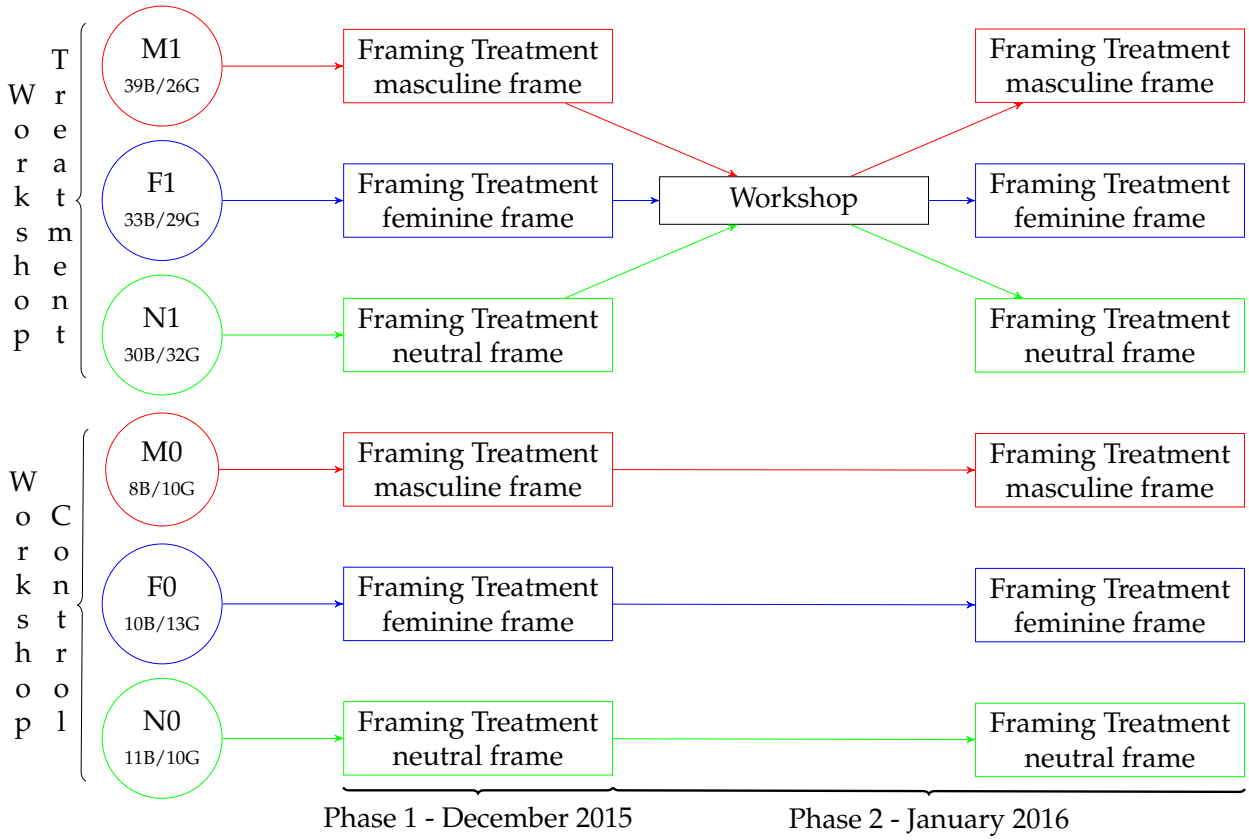

Figure 2: Structure of the experiment.

Summing up across the groups, we thus see that about 75% of the subjects belongs to the treatment group of the Workshop Treatment (groups $M1$, $F1$, and $N1$, 189 children out of 251), whereas the remaining 25% (groups $M0$, $F0$, and $N0$, 62 children) constitutes the control group.[11] Summing up across the frames, we obtain the number of boys and girls exposed to the masculine frame (groups $M1$ and $M0$), feminine frame ($F1$ and $F0$), or neutral frame (groups $N1$ and $N0$) in the Framing Treatment. Table 1 gives these figures and

and 4 in Section 3 for the relevant summary statistics. See Appendix A2 for more details about the composition of the six subgroups.

[11] To make the visit to the *Museo del Risparmio* worthwhile, also the children in the control group attended the workshop. However they did so only *after* having gone through the second repetition of the MPL task so that the workshop could not affect their performance.

shows that the sample is well-balanced also with regard to this dimension.

[TABLE 1 APPROXIMATELY HERE]

As for the timing and location of the experiment, all classes went through the first repetition of the Framing Treatment (Phase 1 in Figure 2) between the 1st and 3rd of December 2015 on the premises of the schools. Then all classes then went through Phase 2 (attendance at the workshop and second repetition of the Framing Treatment - the two activities took place on the same day) between the 9th and 21st of January 2016 on the premises of the *Museo del Risparmio di Torino*.[12]

3. Descriptive Statistics

As mentioned above, 251 children took part in the experiment. Since each child repeated the Framing Treatment twice, our balanced sample thus consists of 502 observations. Table 2 gives the descriptive statistics of the sample.[13]

The sample is gender-balanced (52% are boys and 48% are girls) with about 18% of participants being non-Italian citizens. The parents' level of education is in line with that of the general population (OECD, 2014) with about 20% of parents having completed only mandatory education (up to the age of 16) and 33% holding a university degree. As for familiarity with managing money, about 20% of the children regularly receive some pocket money from their parents, whereas 58% declare some savings.

[12]The fact that the experiment took place over December and January can potentially distort the children's savings attitude because of a "Christmas effect". We think, however, that the prizes in the experiment (balloons) are not close substitutes for the presents children received for Christmas, as the latter usually consist of more valuable items such as toys, dolls and video games.

[13]We retrieved the information that appears in the table from a basic socio-demographic questionnaire that we distributed to the children's parents about a month before the experiment started. The number of observations for some of these variables is less than 251 because of missing answers.

[TABLE 2 APPROXIMATELY HERE]

Table 3 compares the summary statistics conditional on the three conceptual frames used in the Framing Treatment (i.e., groups $M1 + M0$ vs. $F1 + F0$ vs. $N1 + N0$). Each subgroup presents a balanced gender composition and the table highlights only small differences in the participants' socio-economic characteristics.[14]

[TABLE 3 APPROXIMATELY HERE]

Instead, Table 4 focuses on the comparison between the treatment group (subgroups $F1$, $M1$ and $N1$) and the control groups ($F0$, $M0$ and $N0$) with respect to the Workshop Treatment. Here, we do find some differences in the educational level of the parents, in the children's math grade, and in the percentage of children receiving pocket money and having some savings. This evidence suggests to control for these variables in the regression analysis that we propose in Section 4.

[TABLE 4 APPROXIMATELY HERE]

3.1 The Dependent Variable

Our main variable of interest is the level of coherence in participants' answers to the two repetitions of the MPL task (see Figure 1). We encode individual answers in a string of 10 characters, e.g., AAAAAAAAAA, AAABBBBBBB, or ABBBAABBBB. We consider individual answers consistent when we observe one switching point between As and Bs at most,

[14] These differences are mostly related to the children's grades in Math and to having their own savings.

and the respondent never switches from B to A. Thus, the first two strings are examples of consistent choices, while the third one is not. More precisely, the choices are consistent when the child 1) always selects A, 2) always selects B, or 3) initially selects A and then switches to B once and for all. Patterns 1 and 2 reveal, respectively, that the child always prefers either the immediate or the delayed payment, whatever the actual interest rate. Instead, pattern 3 reveals that the child prefers immediate payment when the interest rate is relatively low and delayed payment when it is sufficiently high.[15]

Table 5 shows the percentage of consistent answers in the sample. In the first repetition of the Framing Treatment, this is about 44% among boys and 42% among girls. In the second repetition, it increases to 64% among boys and 58% among girls. The difference between the two repetitions is statistically significant, whereas the difference between the performance of boys and girls is not.

[TABLE 5 APPROXIMATELY HERE]

Inconsistency (and consistency) in the children's answers is quite persistent across the two repetitions of the MPL task (see Table 6). About 34% of the children provide consistent answers in both repetitions, whereas 31% give inconsistent answers in both. Improvement, i.e., the shift from inconsistent to consistent answers, involves 27% of the children, while only 8% of them shifts from consistent to inconsistent answers.

[TABLE 6 APPROXIMATELY HERE]

[15] Andersen et al. (2006) rationalize inconsistent answers that display multiple switching points by allowing for the possibility that respondents are indifferent among some of the choices and thus randomize within that set. Alan and Ertac (2018) report that some of the subjects who provided inconsistent answers declared not to have properly understood the task. As mentioned before, in our experiment teachers unanimously confirmed that the children have adequate cognitive abilities to understand the task. We thus interpret inconsistent answers as a sign that the respondent did not pay attention during the introduction/explanation of the task or had no interest in completing it.

Focusing on the 34% of the children who provide consistent answers in both repetitions of the MPL task, Table 7 investigates whether these subjects differ in terms of the observables with respect to the rest of the population. Indeed, the table shows that students who provide consistent answers in both repetitions of the MPL task show a lower incidence of foreign citizens, have on average higher educated parents, and a bit more experience with receiving pocket money and managing their own savings.

[TABLE 7 APPROXIMATELY HERE]

4. Empirical Strategy

We are interested in studying the (combined) effects of the Framing Treatment and the Workshop Treatment on the level of consistency in the children's answers. To elicit the framing effect, we exploit the heterogeneity in the participants' answers across the three different conceptual frames, masculine, feminine, and neutral (the latter is our control group). To elicit the effect of the workshop, we analyze the variation that individual answers display over time, exploiting the fact that about 75% of the children attended the workshop between the first and the second repetition of the MPL task while the remaining 25% did not. The simplest specification of our model is as follows:

$$\begin{aligned} Y_{i,t} = \beta_0 + \beta_1 Time + \beta_2 Workshop + \beta_3 \left(Time * Workshop\right) + \\ + \beta_4 Mas_{frame} + \beta_5 Fem_{frame} + X_{i,t}\gamma + e_i + u_{i,t} \end{aligned} \tag{1}$$

where $Y_{i,t}$ takes value 1 if the answers of child i in repetition $t \in \{1, 2\}$ of the MPL task are consistent and value 0 otherwise. *Time* is a dummy that identifies the round of the MPL task ($Time = 0$ for the first round, $Time = 1$ for the second round). It thus captures the

learning effect due to the repetition of the task. *Workshop* is a dummy that identifies the group to which the individual belongs in terms of the Workshop Treatment ($Workshop = 1$ for the treated group, i.e., those who went through the second repetition of the MPL task *after* having attended the workshop; and $Workshop = 0$ for the control group, i.e., those who went through the second repetition of the task *without* having attended the workshop). It thus captures the initial systematic differences between the two groups. The variable $Time * Workshop$ is the treatment dummy. If the estimated coefficient β_3 is positive and statistically significant, we can thus infer that attending the workshop improves the consistency of the children's answers. Moving to the effects of the Framing Treatment, the dummies Mas_{frame} and Fem_{frame} identify the (masculine or feminine) frame to which the child was exposed. If the estimated coefficients β_4 and β_5 are positive and significant, it means that the use of gender-specific frames improves the consistency of the children's answers with respect to the neutral frame (omitted category). Finally, $X_{i,t}$ is a set of explanatory variables that includes information about the child's gender (variables *Boy* and *Girl*), level of education of his/her parents and their citizenship, whether the child receives pocket money or has some savings, and his/her grade in Math.[16] In order to control for the school fixed effect, the set of regressors also includes dummies for the school.

In the course of the analysis, we progressively interact the variables of interest (*Time*, *Workshop*, $Time * Workshop$, $\{Mas_{frame}, Fem_{frame}, Neut_{frame}\}$, $\{Boy, Girl\}$) such as to finally estimate a fully interacted model. This allows us to study how the two treatments interact and thus evaluate how the gender-specific conceptual frames combine with the effects triggered by attending the workshop. We model the error term to separately account for two individual-specific components. The first is a random effect that accounts for all the unobserved individual characteristics that can influence the consistency of the

[16] A part from their gender - they were all women -, we did not collect information about the teachers as they did not play any role in the explanation and implementation of the experiment.

answers. These characteristics are assumed to be time-invariant and uncorrelated with the other regressors. The second component varies over time and we cluster it at the class level (class is the unit of randomization) in order to account for the presence of common factors that may affect the children within each single class. We thus implement a generalized least squares Logit. As robustness checks, we then replicate the analysis of the fully interacted model through Probit, GLS with random effects and GLS with fixed effects.

We also run a second set of regressions aimed at investigating the determinants of the children's level of impatience. For these estimates, we focus on the subgroup of children that provided consistent answers in both repetitions of the MPL task (refer to Table 7 to see how these children compare with the rest of the population in terms of the observables). We measure impatience as the number of A answers they provided (i.e., preferring 10 balloons tomorrow rather than $10 + x$ in a month). We thus run a Logit and FE GLS on the same set of variables as before, using as the dependent variable $A_{i,t}$, the number of A answers which child i provided in repetition $t \in \{1, 2\}$ of the task.

5. Results

Table 8 presents the estimation results of the Logit specification for the determinants of the level of consistency of children's answers. In each column, we use a different set of explanatory variables and report the marginal effects.

[TABLE 8 APPROXIMATELY HERE]

The results show that the Workshop Treatment has a positive effect on the level of consistency of the children's answers. After the children have attended the workshop the prob-

ability that they provide a consistent set of answers rises by 20 percentage points (see the variable *Workshop X Time* in model (i), significance at 10%). As for the Framing Treatment, gender-specific conceptual frames initially do not appear to be effective in increasing the degree of consistency of individual answers (see the coefficients of the variables *Masculine frame* and *Feminine frame* in model (i)). However, model (ii) shows that the interaction of the feminine frame with the Workshop Treatment triggers a positive effect (variable *Workshop X Time X Fem. frame*, coefficient of 0.379 significant at 1%); on the contrary, the analogous effect of the masculine frame appears to be null (variable *Workshop X Time X Masc. frame*, coefficient of 0.126 not significant).

The fully interacted model (model (iii)) further explores these relationships. It shows that girls exposed to the feminine frame increase their probability of providing consistent answers by about 53 percentage points when they attend the workshop (variable *Workshop X Time X Fem. frame X Girl*, 0.529 significant at 1%). Probit, GLS with random effects, and GLS with fixed effects estimates confirm the sign, size and significance of this coefficient (see Table 9).[17] The same result does not hold for what concerns the effects that the masculine frame triggers on boys: the coefficient for the variable *Workshop X Time X Mas. frame X Boy* remains statistically not significant across all specifications.[18]

[TABLE 9 APPROXIMATELY HERE]

[17] We perceive the results that stem out from GLS with fixed effects to be particularly solid as the specification washes away all potential classes and experimenters fixed effects. In such specification (see column iii in Table 9), the variable *Workshop X Time X Fem. frame X Girl* is actually the only one that displays a significant coefficient.

[18] The Logit model (Table 8) reports a negative effect of the neutral frame on boys (*Workshop X Time X Neut. frame X Boy*). The effect remains significant, although smaller in size, in Probit but it vanishes and becomes insignificant in RE GLS and FE GLS (Table 9). More in general, the neutral frame provides a possible benchmark for comparing our results with those in Coda Moscarola and Migheli (2017). Coda Moscarola and Migheli (2017) find that the workshop increased the number of consistent answers of boys but had no significant effects on girls. Our results confirm that the workshop leads to no significant effects on girls (variable *Workshop X Time X Neut. frame X Girl*). The effect on boys instead ranges from negative to insignificant, depending on the model specification. We attribute these differences to the fact that the two experiments, albeit similar, are not identical. In particular, Coda Moscarola and Migheli (2017) do not use any frame (whereas our neutral frame still provides a frame). Moreover, the two experiments assign different prizes (see footnote 3).

Overall, the total effect of the experimental design on the level of consistency of children's answers (sum of a learning effect –captured by the variables *Time X Masc./Fem./Neut. frame*– and a treatment effect –variables *Workshop X Time X Masc./Fem./Neut. frame*) appears to be positive and statistically different from zero (see the pvalues tests at the end of Tables 8 and 9).

As for the other potential determinants of children's level of consistency, all specifications of the fully interacted model (column iii in Table 8 and columns i and ii in Table 9) provide coherent results.[19] Receiving pocket money increases the probability of providing consistent answers by about 13 percentage points. Indeed, pocket money can be considered an educational tool that parents employ to teach their children how to manage money, a sort of learning-by-doing experience.[20] Unexpectedly, the Math grade is instead negatively correlated with the consistency of the answers, as it reduces the probability of a consistent answer by about 6 percentage points. This may depend on the fact that in Italian elementary schools the Math curriculum focuses more on arithmetic than logic. Finally, parents' educational level plays an important role: having a father (resp. mother) with a university degree instead of only mandatory education increases the probability of providing consistent answers by about 21 (resp. 16) percentage points.

To complement the above results, we then explore the effect of our treatments on the children's level of impatience. We necessarily run such a test only on the subsample of children providing consistent answers in both repetitions of the MPL task, i.e., on only about 34% of the sample. The small sample size does not allow us to derive strong conclusions. Moreover, we already know (see Table 7 and the discussion at the end of Section 3.1) that these children have on average higher educated parents and slightly more experience

[19]Clearly, all these effects drop out in the FE GLS specification in Table 9 as they are fixed effects across individuals.

[20]See Sansone et al. (2019) for evidence about the positive relation between receiving pocket money in childhood and financial confidence in adulthood.

with receiving pocket money and managing their own savings. Table 10 reports the estimates of the fully interacted model under the Logit specifications (first three columns) and the FE GLS specification (fourth column).

Logit estimates show that in general the treatment has no effect (variable *Workshop X Time* in column i, 1.204 not significant). However, the interaction of the treatment with the masculine frame (variable *Workshop X Time X Masc. frame* in column ii, 4.060 significant at 5%) increases impatience and this effect is driven by the way boys react to the frame (variable *Workshop X Time X Masc. frame X Boy* in column iii, 3.661 significant at 1%), possibly because of the arousal effect triggered by the gender-specific framing. The significance of this latter effect is confirmed by the FE GLS specification (4.267, significant at 10%, this is the unique significant coefficient among those that interact the treatment with frames and genders).[21] In this respect, it is interesting to notice that the feminine frame does not trigger a similar effect on girls. Thus, the positive effects that a gender-specific conceptual frame brings on girls in terms of consistency of their answers does not come at the cost of increasing their level of impatience. More in general, the total effect of the experimental design on the level of impatience is never significantly different from zero, independently of the frames (see the pvalues tests at the end of Table 10).

[TABLE 10 APPROXIMATELY HERE]

[21] The FE GLS specification also confirms that learning under the masculine frame decreases girls' level of impatience (variable *Time X Masc. Frame X Girl*), as already highlighted by the Logit specification (column 3).

6. Conclusions

We provide field evidence on the effect of gender-specific conceptual frames on people's level of attention and quality of choices. Thaler and Sunstein (2009) demonstrate that the way of presenting the potential utility of a task can serve as a "nudge" that alters people's behavior in the desired way, without precluding any option or changing significantly the economic incentives embedded in the choice. In line with this view, we conjecture that a more gender-specific approach in framing financial tasks could boost the attention and interest of women, improve the quality of their answers, and thus ultimately impact on their level of participation in financial markets. To address these issues, we run a field experiment that targets elementary school children. We propose two treatments to boost the attention of the children: a) one which is short, gender-specific and leverages on the children's instinctive reactions; and b) another which is longer, gender-neutral and educational. We measure the effects of these two treatments on both the consistency of the children's answers and their level of impatience. We find that gender-specific frames are effective in increasing the number of consistent answers among girls only. Attending the workshop has a comparable effect on both girls and boys but, upon closer inspection, the gender-specific framing boosts the positive effect of the workshop only on girls. As for the impact on the level of impatience, the feminine frame does not seem to affect girls' level of impatience. Our findings support the idea that a more gender-specific frame, one that women can identify more with, may play a role in increasing their interest for financial activities and thus contribute in narrowing the gender gap in financial market participation and decision-making.

Tables

Table 1: Framing Treatment by Gender.

	Boys	% wrt total boys	% wrt total	Girls	% wrt total girls	% wrt total	total by frame	% wrt total
Masculine frame	47	36%	19%	36	30%	14%	83	33%
Feminine frame	43	33%	17%	42	35%	17%	85	34%
Neutral frame	41	31%	16%	42	35%	17%	83	33%
Total	131	100%	52%	120	100%	48%	251	100%

Notes: Each line reports the number of boys (first column) and girls (second column) exposed to the three contextual frames (masculine, feminine, and neutral), together with the relevant percentage values.

Table 2: Descriptive Statistics of the Sample.

	All			Boys			Girls		
	Obs	Mean	St. Dev.	Obs	Mean	St. Dev.	Obs	Mean	St. Dev.
Girls	251	0.48	0.50	131	0.00	0.00	120	1.00	0.00
Foreign citizen	251	0.18	0.38	131	0.17	0.38	120	0.18	0.39
Mother mandatory school	231	0.22	0.41	121	0.21	0.41	110	0.22	0.41
Mother high school diploma	231	0.38	0.49	121	0.36	0.48	110	0.39	0.49
Mother university degree	231	0.34	0.47	121	0.34	0.48	110	0.34	0.47
Father mandatory school	223	0.18	0.39	116	0.18	0.39	107	0.19	0.39
Father high school diploma	223	0.43	0.50	116	0.44	0.50	107	0.42	0.50
Father university degree	223	0.32	0.47	116	0.30	0.46	107	0.34	0.47
Math grade	237	8.48	1.04	125	8.42	1.11	112	8.56	0.95
Pocket money	251	0.20	0.40	131	0.22	0.42	120	0.18	0.39
Own savings	251	0.58	0.49	131	0.61	0.49	120	0.55	0.50

Notes: Foreign citizenship and Math grades are reported by teachers. Receiving pocket money and having some savings are reported by the children. All other variables are reported by the children's parents through a written questionnaire.

Table 3: Comparison among Groups Exposed to the 3 Frames in the Framing Treatment.

	Masculine frame (M)			Feminine frame (F)			Neutral frame (N)			Ho:Diff=0 (P-values)		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	M-F	F-N	M-N
Girls	83	0.43	0.50	85	0.49	0.50	83	0.51	0.50	0.44	0.88	0.35
Foreign citizen	83	0.17	0.38	85	0.13	0.34	83	0.23	0.42	0.48	0.09	0.33
Mother mandatory school	79	0.25	0.44	80	0.19	0.39	72	0.21	0.41	0.32	0.75	0.52
Mother high school diploma	79	0.29	0.46	80	0.42	0.50	72	0.42	0.50	0.08	0.92	0.11
Mother university degree	79	0.35	0.48	80	0.35	0.48	72	0.31	0.46	0.95	0.56	0.53
Father mandatory school	76	0.18	0.39	79	0.19	0.39	68	0.18	0.38	0.93	0.84	0.90
Father high school diploma	76	0.45	0.50	79	0.38	0.49	68	0.47	0.50	0.40	0.27	0.78
Father university degree	76	0.33	0.47	79	0.34	0.48	68	0.28	0.45	0.87	0.42	0.52
Math grade	83	8.64	1.11	71	8.25	1.09	83	8.53	0.87	0.03	0.08	0.49
Pocket money	83	0.25	0.44	85	0.16	0.37	83	0.19	0.40	0.16	0.64	0.35
Own savings	83	0.65	0.48	85	0.60	0.49	83	0.49	0.50	0.50	0.17	0.04

Notes: The last three columns report the t-test on means with unequal variances between the masculine and feminine frames, the feminine and neutral, and the masculine and neutral, respectively.

Table 4: Comparison among Treated and Control Groups wrt the Workshop Treatment.

	Treated			Control			Ho:Diff=0
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	P-values
Girls	189	0.46	0.50	62	0.53	0.50	0.33
Foreign citizen	189	0.19	0.39	62	0.13	0.34	0.24
Mother mandatory school	172	0.21	0.41	59	0.24	0.43	0.66
Mother high school diploma	172	0.35	0.48	59	0.44	0.50	0.25
Mother university degree	172	0.38	0.49	59	0.22	0.42	0.02
Father mandatory school	166	0.15	0.36	57	0.28	0.45	0.05
Father high school diploma	166	0.48	0.50	57	0.30	0.46	0.02
Father university degree	166	0.31	0.47	57	0.33	0.48	0.78
Math grade	179	8.41	1.05	58	8.72	0.97	0.04
Pocket money	189	0.16	0.37	62	0.32	0.47	0.02
Own savings	189	0.54	0.50	62	0.69	0.46	0.03

Notes: The last column reports the t-test on means with unequal variances between those who attended the workshop before the second repetition of the MPL task (the treated group, 189 individuals) and those who instead attended the workshop only after the second repetition of the MPL task (the control group, 62 individuals).

Table 5: Consistency in Individual Answers by Gender and Time.

Consistent answers	Boys (131)			Girls (120)			Ho: Diff=0
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	p-values
First repetition	57	0.435	0.043	50	0.417	0.045	0.769
Second repetition	84	0.641	0.042	69	0.575	0.045	0.285
Ho: diff=0 (p-values)		0.001			0.014		

Notes: The two columns reports the number of boys (first column, total 131) and girls (second column, total 120) who provided consistent answers in the first and second repetition of the MPL task.

Table 6: Persistence in Consistency/Inconsistency by Gender and Time.

	All (251)	Boys (131)	Girls (120)
$Y_{i,1} = 1$ and $Y_{i,2} = 1$	34%	35%	33%
$Y_{i,1} = 0$ and $Y_{i,2} = 0$	31%	27%	35%
$Y_{i,1} = 0$ and $Y_{i,2} = 1$	27%	30%	24%
$Y_{i,1} = 1$ and $Y_{i,2} = 0$	8%	8%	8%

Notes: $Y_{i,t} = 1$ indicates that in the t^{th} repetition of the MPL task ($t \in 1, 2$) individual i provided a consistent answer. $Y_{i,t} = 0$ indicates that he/she instead provided an inconsistent answer.

Table 7: Comparison between Consistent and Inconsistent Individuals.

	Consistent			Inconsistent			Ho:Diff=0
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	P-values
Girls	86	0.47	0.50	165	0.48	0.50	0.77
Foreign citizen	86	0.10	0.31	165	0.21	0.41	0.03
Mother mandatory school	84	0.15	0.36	147	0.25	0.44	0.09
Mother high school diploma	84	0.37	0.49	147	0.38	0.49	0.86
Mother university degree	84	0.42	0.50	147	0.29	0.46	0.06
Father mandatory school	81	0.17	0.38	142	0.19	0.39	0.75
Father high school diploma	81	0.35	0.48	142	0.48	0.5	0.05
Father university degree	81	0.42	0.50	142	0.26	0.44	0.01
Math grade	83	8.55	0.93	154	8.45	1.09	0.45
Pocket money	86	0.29	0.46	165	0.16	0.37	0.01
Own savings	86	0.69	0.47	165	0.53	0.50	0.02

Notes: The last column reports the t-test on means with unequal variances between those who provided consistent answers in both repetitions of the MPL task and those who instead provided inconsistent answers in at least one of the two repetitions.

Table 8: RE Logit on Consistency of Individual Answers (Margins)

	(i)	(ii)	(iii)
Time	0.026		
	(0.091)		
Workshop	-0.437***		
	(0.073)		
Workshop X Time	0.202*		
	(0.109)		
Masculine frame	-0.070		
	(0.078)		
Feminine frame	-0.021		
	(0.081)		
Time X Masc. frame		0.044	
		(0.090)	
Time X Fem. frame		-0.138**	
		(0.057)	
Time X Neut. frame		0.357***	
		(0.061)	
Workshop X Masc. frame		-0.485***	
		(0.086)	
Workshop X Fem. frame		-0.354***	
		(0.080)	
Workshop X Neutr. frame		-0.446***	
		(0.091)	
Workshop X Time X Masc. frame		0.126	
		(0.115)	
Workshop X Time X Fem. frame		0.379***	
		(0.091)	
Workshop X Time X Neutr. frame		-0.078	
		(0.090)	
Time X Masc. frame X Girl			-0.031
			(0.067)
Time X Fem. frame X Girl			-0.210***
			(0.040)
Time X Neut. frame X Girl			0.134***
			(0.041)
Time X Masc. frame X Boy			0.134*
			(0.076)
Time X Fem. frame X Boy			0.008
			(0.045)
Time X Neut. frame X Boy			2.509***
			(0.289)
Workshop X Masc. frame X Girl			-0.427***
			(0.122)
Workshop X Fem. frame X Girl			-0.271***
			(0.096)
Workshop X Neut. frame X Girl			-0.395***
			(0.061)
Workshop X Masc. frame X Boy			-0.370***
			(0.085)
Workshop X Fem. frame X Boy			-0.297***
			(0.075)
Workshop X Neut. frame X Boy			-0.330***
			(0.104)
Workshop X Time X Masc. frame X Girl			0.111
			(0.088)
Workshop X Time X Fem. frame X Girl			0.529***
			(0.080)
Workshop X Time X Neut. frame X Girl			0.119
			(0.090)
Workshop X Time X Masc. frame X Boy			0.039
			(0.141)
Workshop X Time X Fem. frame X Boy			0.097
			(0.124)

Workshop X Time X Neut. frame X Boy			-2.316***
			(0.284)
Girls	-0.031	-0.034	
	(0.051)	(0.050)	
Foreign citizen	-0.003	0.014	0.013
	(0.096)	(0.098)	(0.076)
Maths grade	-0.071***	-0.069***	-0.058***
	(0.027)	(0.024)	(0.019)
Mother high school diploma	0.104	0.102	0.085
	(0.083)	(0.083)	(0.067)
Mother university degree	0.187	0.195*	0.161*
	(0.123)	(0.118)	(0.096)
Father high school diploma	0.051	0.057	0.041
	(0.103)	(0.104)	(0.081)
Father university degree	0.271**	0.269**	0.210**
	(0.111)	(0.107)	(0.085)
Pocket money	0.142**	0.161**	0.130**
	(0.065)	(0.065)	(0.052)
Own savings	0.037	0.024	0.026
	(0.086)	(0.080)	(0.066)
Schools dummies	yes	yes	yes
Observations	420	420	420
test(pvalue)			
Workshop X Time X Masc. frame+Time X Masc. frame=0		0.0297	
Workshop X Time X Fem. frame+Time X Fem. frame=0		0.0044	
Workshop X Time X Neut. frame+Time X Neut. frame=0		0.0006	
Workshop X Time X Fem. frame X Girl=Workshop X Time X Neut. frame X Girl			0.0009
Workshop X Time X Fem. frame X Girl=Workshop X Time X Masc. frame X Girl			0.0003
Workshop X Time X Neut. frame X Boy=Workshop X Time X Masc. frame X Boy			0.0000
Workshop X Time X Neut. frame X Boy=Workshop X Time X Fem. frame X Boy			0.0000
Workshop X Time X Masc. frame X Girl+Time X Masc. frame X Girl=0			0.1937
Workshop X Time X Fem. frame X Girl+Time X Fem. frame X Girl=0			0.0000
Workshop X Time X Neut. frame X Girl+Time X Neut. frame X Girl=0			0.0081
Workshop XTime X Masc. frame X Boy+Time X Masc. frame X Boy=0			0.1582
Workshop X Time X Fem. frame X Boy+Time X Fem. frame X Boy=0			0.3915
Workshop X Time X Neut. frame X Boy+Time X Neut. frame X Boy=0			0.0000

Notes: Balanced panel. Error terms clustered at class level. Standard errors in parentheses. Significance levels: p* 0.10, p** 0.05, p*** 0.01. Omitted variables: Neutral frame, Boys, Mother mandatory school, Father mandatory school.

Table 9: RE Probit, RE GLS and FE GLS on Consistency of Individual Answers (Margins)

	(i)	(ii)	(iii)
Time X Masc. frame X Girl	0.008	-0.027	-0.100
	(0.090)	(0.069)	(0.176)
Time X Fem. frame X Girl	-0.222***	-0.217***	-0.200
	(0.057)	(0.040)	(0.176)
Time X Neut. frame X Girl	0.124**	0.081**	0.111
	(0.058)	(0.039)	(0.186)
Time X Masc. frame X Boy	0.202*	0.114	0.000
	(0.107)	(0.077)	(0.211)
Time X Fem. frame X Boy	-0.037	0.015	0.111
	(0.066)	(0.046)	(0.186)
Time X Neut. frame X Boy	1.438***	0.222***	0.250
	(0.126)	(0.044)	(0.197)
Workshop X Masc. frame X Girl	-0.421***	-0.441***	
	(0.119)	(0.130)	
Workshop X Fem. frame X Girl	-0.268***	-0.273***	
	(0.092)	(0.099)	
Workshop X Neut. frame X Girl	-0.382***	-0.410***	
	(0.066)	(0.065)	
Workshop X Masc. frame X Boy	-0.370***	-0.378***	
	(0.087)	(0.098)	
Workshop X Fem. frame X Boy	-0.298***	-0.300***	
	(0.077)	(0.083)	
Workshop X Neut. frame X Boy	-0.322***	-0.339***	
	(0.104)	(0.120)	
Workshop X Time X Masc. frame X Girl	0.065	0.110	0.183
	(0.103)	(0.091)	(0.210)
Workshop X Time X Fem. frame X Girl	0.557***	0.550***	0.533**
	(0.086)	(0.070)	(0.214)
Workshop X Time X Neut. frame X Girl	0.123	0.189**	0.158
	(0.091)	(0.094)	(0.216)
Workshop X Time X Masc. frame X Boy	-0.019	0.086	0.200
	(0.161)	(0.160)	(0.231)
Workshop X Time X Fem. frame X Boy	0.141	0.096	-0.000
	(0.125)	(0.135)	(0.215)
Workshop X Time X Neut. frame X Boy	-1.247***	-0.014	-0.042
	(0.132)	(0.061)	(0.228)
Maths grade	-0.059***	-0.058***	
	(0.020)	(0.021)	
Mother high school diploma	0.082	0.081	
	(0.066)	(0.069)	
Mother university degree	0.157*	0.156	
	(0.095)	(0.102)	
Father high school diploma	0.036	0.030	
	(0.079)	(0.085)	
Father university degree	0.214***	0.205**	
	(0.082)	(0.091)	
Pocket money	0.126**	0.119**	
	(0.051)	(0.053)	
Own savings	0.027	0.029	
	(0.065)	(0.072)	
Foreign citizen	0.014	0.007	
	(0.075)	(0.080)	
Constant		0.951***	0.467***
		(0.170)	(0.027)
Schools dummies	yes	yes	yes
Observations	420	420	420

test(pvalue)			
Workshop X Time X Fem. frame X Girl=Workshop X Time X Neut. frame X Girl	0.0007	0.0018	
Workshop X Time X Fem. frame X Girl=Workshop X Time X Masc. frame X Girl	0.0001	0.0001	
Workshop X Time X Neut. frame X Boy=Workshop X Time X Masc. frame X Boy	0.0000	0.5296	
Workshop X Time X Neut. frame X Boy=Workshop X Time X Fem. frame X Boy	0.0000	0.4233	
Workshop X Time X Masc. frame X Girl+Time X Masc. frame X Girl=0	0.1588	0.1648	0.4651
Workshop X Time X Fem. frame X Girl+Time X Fem. frame X Girl=0	0.0000	0.0000	0.0067
Workshop X Time X Neut. frame X Girl+Time X Neut. frame X Girl=0	0.0094	0.0064	0.0147
Workshop XTime X Masc. frame X Boy+Time X Masc. frame X Boy=0	0.1419	0.1560	0.0352
Workshop X Time X Fem. frame X Boy+Time X Fem. frame X Boy=0	0.3876	0.4131	0.3020
Workshop X Time X Neut. frame X Boy+Time X Neut. frame X Boy=0	0.0000	0.0001	0.0688

Notes: Balanced panel. Error terms clustered at class level. Standard errors in parentheses. Significance levels: p* 0.10, p** 0.05, p*** 0.01. Omitted variables: Neutral frame, Boys, Mother mandatory school, Father mandatory school.

Table 10: RE Logit and FE GLS on Children's Revealed Impatience Rate

	(i)	(ii)	(iii)	GLS
Time	-1.516			
	(0.986)			
Workshop	-1.605*			
	(0.888)			
Workshop X Time	1.204			
	(1.227)			
Masculine frame	-1.664***			
	(0.638)			
Feminine frame	-1.667**			
	(0.770)			
Time X Masc. frame		-3.417***		
		(0.168)		
Time X Fem. frame		-0.191		
		(0.876)		
Time X Neut. frame		-0.388		
		(0.491)		
Workshop X Masc. frame		-2.956**		
		(1.505)		
Workshop X Fem. frame		-0.992		
		(1.296)		
Workshop X Neut. frame		-1.502*		
		(0.913)		
Workshop X Time X Masc. frame		4.060**		
		(1.613)		
Workshop X Time X Fem. frame		-1.420		
		(1.448)		
Workshop X Time X Neut. frame		0.701		
		(0.648)		
Time X Masc. frame X Girl			-4.482***	-3.857***
			(0.192)	(1.547)
Time X Fem. frame X Girl			-0.669	0.000
			(0.919)	(2.047)
Time X Neut. frame X Girl			0.012	-1.167
			(0.466)	(1.671)
Time X Masc. frame X Boy			-1.994***	-2.600
			(0.250)	(1.831)
Time X Fem. frame X Boy			0.398	1.667
			(1.157)	(2.364)
Time X Neut. frame X Boy			-0.708	-0.833
			(0.653)	(1.671)
Workshop X Masc. frame X Girl			-1.684	
			(2.686)	
Workshop X Fem. frame X Girl			-2.339*	
			(1.315)	
Workshop X Neut. frame X Girl			-2.856***	
			(0.894)	
Workshop X Masc. frame X Boy			-3.265*	
			(1.820)	
Workshop X Fem. frame X Boy			0.102	
			(1.584)	
Workshop X Neut. frame X Boy			-0.065	
			(1.505)	
Workshop X Time X Masc. frame X Girl			3.282	2.657
			(2.759)	(2.397)
Workshop X Time X Fem. frame X Girl			-2.831	-3.500
			(2.256)	(2.507)
Workshop X Time X Neut. frame X Girl			2.273***	3.452

			(0.859)	(2.278)
Workshop X Time X Masc. frame X Boy			3.661***	4.267*
			(1.223)	(2.284)
Workshop X Time X Fem. frame X Boy			-0.498	-1.767
			(1.092)	(2.695)
Workshop X Time X Neut. frame X Boy			-0.514	-0.389
			(1.465)	(2.158)
Girls	-1.254	-1.267		
	(0.866)	(0.888)		
Foreign citizen	2.283*	2.044	1.844	
	(1.335)	(1.262)	(1.236)	
Maths grade	0.217	0.243	0.481	
	(0.355)	(0.356)	(0.322)	
Mother high school diploma	1.720	1.751	1.426	
	(1.199)	(1.192)	(1.208)	
Mother university degree	-0.270	-0.351	-0.858	
	(1.640)	(1.712)	(1.491)	
Father high school diploma	0.367	0.695	1.454	
	(1.568)	(1.528)	(1.696)	
Father university degree	-0.777	-0.436	-0.078	
	(1.065)	(1.041)	(1.004)	
Pocket money	0.441	0.450	0.549	
	(0.538)	(0.555)	(0.477)	
Own savings	0.616	0.473	0.400	
	(1.426)	(1.465)	(1.538)	
Constant	7.115*	5.125	3.240	5.722***
	(3.841)	(3.696)	(3.860)	(0.326)
Schools dummies	yes	yes	yes	yes
Observations	158	158	158	158
test(pvalue)				
Workshop X Time X Masc. frame+Time X Masc. frame=0		0.6821		
Workshop X Time X Fem. frame+Time X Fem. frame=0		0.1400		
Workshop X Time X Neut. frame+Time X Neut. frame=0		0.4653		
Workshop X Time X Fem. frame X Girl=Workshop X Time X Neut. frame X Girl			0.0245	
Workshop X Time X Fem. frame X Girl=Workshop X Time X Masc. frame X Girl			0.0826	
Workshop X Time X Neut. frame X Boy=Workshop X Time X Masc. frame X Boy			0.0225	
Workshop X Time X Neut. frame X Boy=Workshop X Time X Fem. frame X Boy			0.9929	
Workshop X Time X Masc. frame X Girl+Time X Masc. frame X Girl=0			0.6585	
Workshop X Time X Fem. frame X Girl+Time X Fem. frame X Girl=0			0.1130	
Workshop X Time X Neut. frame X Girl+Time X Neut. frame X Girl=0			0.0037	
Workshop X Time X Masc. frame X Boy+Time X Masc. frame X Boy=0			0.1560	
Workshop X Time X Fem. frame X Boy+Time X Fem. frame X Boy=0			0.6334	
Workshop X Time X Neut. frame X Boy+Time X Neut. frame X Boy=0			0.3403	

Notes: Balanced panel. Error terms clustered at class level. Standard errors in parentheses. Significance levels: p* 0.10, p** 0.05, p*** 0.01. Omitted variables: Neutral frame, Boys, Mother mandatory school, Father mandatory school.

Appendix

A1. Introductory Statements in Italian

1 - Masculine frame

In palio tanti palloncini per sfidare chi volete voi in giochi e gare avvincenti. Volete un esempio? Avete mai fatto la corsa dei palloncini? Dovete essere agili, veloci e astuti. Vince chi arriva primo al traguardo spingendo il palloncino solo con il naso.

2 - Feminine frame

In palio tanti palloncini da condividere con chi volete per fare insieme giochi divertenti. Volete un esempio? Avete mai fatto il ballo del palloncino? Dovete essere bravi a collaborare. Si gioca a coppie e, tenendo tra le vostre schiene due palloncini, dovete ballare senza farli cadere e senza mai aiutarvi con le mani.

3 - Neutral frame

In palio tanti palloncini per fare giochi divertenti.

A2. Composition of the Subgroups

The subgroups of the participants in the experiment (see also Figure 2) are assembled as follows. The name indicates the school, the number refers to the school year, and the letter to the class. The number in brackets refers to the number of children in the class.

- $M1 = \{$*Palmieri* 3A (23), *Palmieri* 3D (21), *Collodi* 4A (21)$\}$
- $F1 = \{$*Marconi* 3B (21), *Palmieri* 3B (22), *Pertini* 3C (19)$\}$
- $N1 = \{$*Collodi* 3B (22), *Marco Polo* 3A (21), *Palmieri* 3C (19)$\}$
- $M0 = \{$*Marco Polo* 4A (18)$\}$
- $F0 = \{$*Marconi* 3A (23)$\}$
- $N0 = \{$*Palmieri* 3E (21)$\}$

Palmieri elementary school is located in district 3 of the city of Turin, *Marconi* elementary school is located in district 7, *Collodi* elementary school is located in district 8, *Pertini* elementary school is located in district 9, and *Marco Polo* elementary school is located in the city of Moncalieri, a city immediately south of Turin (see footnote 3). In terms of average income, the areas where these schools are located provide a reasonable mix; *Palmieri* is in an affluent neighborhood, *Marco Polo* is in a working-class neighborhood, while *Marconi*, *Collodi* and *Pertini* are in middle-class neighborhoods.

ACKNOWLEDGEMENTS

This research is part of the project *Conta e Racconta* promoted and supported by the *Fondazione per la Scuola - Compagnia di San Paolo* in collaboration with the *Museo del Risparmio di Torino* (Italy). We are particularly thankful to Nicola Crepax and Elisabetta De Martino of the *Fondazione per la Scuola* and to Paola Laiolo and Giovanna Paladino of the *Museo del Risparmio* who provided organizational support and useful advice. We also thank Alessandra Foresta for excellent research assistance and participants in the Workshop on Gender and Stem Subjects (June 2016, Moncalieri, Italy) and the First Conference in Behavioural Economics and Financial Literacy (November 2016, Barcelona, Spain) for useful comments. Finally, a special thank goes to Ainoa Aparicio-Fenoll for having helped us during the revision process. Cecilia Boggio and Andrea Gallice gratefully acknowledge financial support from the Italian Ministry of Education, University and Research (MIUR), "Dipartimenti di Eccellenza" grant 2018-2022.

References

[1] Akerlof, G., & Kranton, R. (2000). Economics and identity. *The Quarterly Journal of Economics*, *115*(3), 715-753.

[2] Alan, S., & Ertac, S. (2018). Fostering patience in the classroom: Results from randomized educational intervention. *Journal of Political Economy*, *126*(5), 1865-1911.

[3] Andersen, S., Harrison, G. W., Lau, M. I., & Rutström, E. E. (2006). Elicitation using multiple price list formats. *Experimental Economics*, *9*(4), 383-405.

[4] Andersen, S., Harrison, G. W., Lau, M. I., & Rutström, E. E. (2008). Eliciting risk and time preferences. *Econometrica*, *76*(3), 583-618.

[5] Arano K., & Terry R. (2010). Gender-based risk aversion and retirement asset allocation. *Economic Inquiry*, *48*(1), 147-155.

[6] Barber B. M., & Odean T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *The Quarterly Journal of Economics*, *116*(1), 261-292.

[7] Becker, G. S., & Mulligan, C. B. (1997). The endogenous determination of time preference. *The Quarterly Journal of Economics*, *112*(3), 729-758.

[8] Bettinger, E., & Slonim, R. (2007). Patience among children. *Journal of Public Economics*, *91*(1), 343-363.

[9] Billingham, M. (2007). Sociological perspectives. In Stretch, B., & Whitehouse, M. (Eds.). *Health and Social Care*, Book 1. Oxford: Heinemann.

[10] Boggio, C., Fornero, E., Prast, H., & Sanders, J. (2018). Seven ways to knit your portfolio: Is the language of investor communication gender neutral? In Garzone, G., Catenaccio, P., Grego, K. & Doerr, R. (Eds.). *Specialised and Professional Discourse Across Media and Genres*. Milano: Ledizioni. 137-160.

[11] Bucher-Koenen, T., Lusardi, A., Alessie, R., & van Rooij, M. (2017). How financially literate are women? An overview and new insights. *The Journal of Consumer Affairs*, *51*(2), 255-283.

[12] Burusic, J., Babarovic, T., & Serie, M. (2012). Differences in elementary school achievement between girls and boys: Does the teacher gender play a role? *European Journal of Psychology of Education*, *27*(4), 523-538.

[13] Buser, T., Niederle, M., & Oosterbeek, H. (2014). Gender, competitiveness and career choices. *Quarterly Journal of Economics*, *129*(3), 1409-1447.

[14] Castillo, M., Ferraro, P. J., Jordan, J. L., & Petrie, R. (2011). The today and tomorrow of kids: Time preferences and educational outcomes of children. *Journal of Public Economics*, *95*(11), 1377-1385.

[15] Chang, F., & Burns, B. (2005). Attention in preschoolers: Associations with effortful control and motivation. *Child Development*, *76*(1), 247-263.

[16] Coda Moscarola, F., & Migheli, M. (2017). Gender differences in financial education: Evidence from primary school. *De Economist*, *165*(3), 321-347.

[17] Coller, M., & Williams, M. B. (1999). Eliciting individual discount rates. *Experimental Economics*, *2*(2), 107-127.

[18] Corwin, S., & Coughenour, J. (2008). Limited attention and the allocation of effort in securities trading. *The Journal of Finance*, *63* (6), 3031-3067.

[19] Costa, G., Stroscia, M., Zengarini, N., & Demaria, M. (2017). *40 anni di salute a Torino. Spunti per leggere i bisogni e i risultati delle politiche*. Milano: Inferenze.

[20] Croson, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic Literature*, *47*(2), 448-74.

[21] Dellavigna, S. & Pollet, J. (2009). Investor inattention and Friday earnings announcements. *The Journal of Finance*, *64* (2), 709-749.

[22] Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., & Wagner, G. G. (2011). Individual risk attitudes: Measurement, determinants, and behavioural consequences. *Journal of the European Economic Association*, *9*(3), 522-550.

[23] Eckel, C., & Grossman, P. (2002). *Differences in the Economic Decisions of Men and Women: Experimental Evidence*. Amsterdam: Elsevier.

[24] Eckel, C., & Grossman, P. (2008). Men, women and risk aversion: Experimental evidence. In Plott, C., & Smith, V. (Eds.). *Handbook of Experimental Economics Results*, Vol. 1. Amsterdam: North-Holland.

[25] Eckert, P., & McConnell-Ginet, S. (2013). *Language and Gender.* Cambridge: Cambridge University Press.

[26] Edwards, C. P., Knoche, L., & Kumru, A. (2001). Play patterns and gender. In Worrell, J. (Ed.). *Encyclopedia of Women and Gender*. San Diego (CA): Academic Press.

[27] Eisner, M., Ribeaud, D., Sorrenti, G. & Zölitz, U. (2019). The causal impact of socio-emotional skills training on educational success. Mimeo.

[28] Fairclough, N. (1992). *Discourse and Social Change*. Cambridge: Polity Press.

[29] Fillmore, C. J., & Baker, C. (2009). A frames approach to semantic analysis. In Heine, B., & Narrog, H. (Eds.). *The Oxford Handbook of Linguistic Analysis*. Oxford: Oxford University Press.

[30] Fonseca, R., Mullen, K. J., Zamarro, G., & Zissimopoulos, J. (2012). What explains the gender gap in financial literacy? The role of household decision making. *The Journal of Consumer Affairs*, *46*(1), 90-106.

[31] Fornero, E., & Monticone, C. (2011). Financial literacy and pension plan participation in Italy. *Journal of Pension Economics and Finance*, *10*(4), 547-564.

[32] Gadamer, H. (1975). *Truth and Method*. New York: Continuum. Trans. of *Wahrheit und Methode*, 1960.

[33] Goffman, E. (1974). *Frame Analysis: An Essay on the Organization of Experience.* Boston (MA): Northeastern University Press.

[34] Gotti, M. (2003). *Specialized Discourse: Linguistic Features and Changing Conventions.* Bern: Peter Lang.

[35] Gotti, M. (2011). *Investigating Specialized Discourse*. Bern: Peter Lang.

[36] Grohmann, A., Kouwenberg, R. & Menkhoff, L. (2015). Childhood roots of financial literacy. *Journal of Economic Psychology*, *51*(C), 114-133.

[37] Guiso, L., & Jappelli, T. (2005). Awareness and stock market participation. *Review of Finance*, *9*(4), 537-567.

[38] Guiso, L., Monte, F., Sapienza, P., & Zingales, L. (2008). Culture, gender and math. *Science*, *320*(5880), 1164-1165.

[39] Harrison, G. W., Lau, M. I., & Williams, M. B. (2002). Estimating individual discount rates in Denmark: A field experiment. *American Economic Review*, *92*(5), 1606-1617.

[40] Heckman, J. J. & Karapakula, G. (2019). The Perry preschoolers at late midlife: A study in design-specific inference. Working Papers 2019-034, Human Capital and Economic Opportunity Working Group.

[41] Jacobson S., & Petrie R. (2009). Learning from mistakes: What do inconsistent choices over risk tell us? *Journal of Risk and Uncertainty*, *38*(2), 143-158.

[42] Kahneman, D. (1973). *Attention and Effort*. New Jersey: Prentice Hall.

[43] Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, *47*(2), 263-291.

[44] Lakoff, G. (1987). *Women, Fire, and Dangerous Things: What Categories Reveal About the Mind.* Chicago (IL): University of Chicago Press.

[45] Lusardi, A., & Mitchell, O. S. (2008). Planning and financial literacy: How do women fare? *American Economic Review*, *98*(2), 413-17.

[46] Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature*, *52*(1), 5-44.

[47] Lusardi, A., Mitchell, O. S., & Curto, V. (2010). Financial literacy among the young. *The Journal of Consumer Affairs*, *44*(2), 358-380.

[48] Lusardi, A., Mitchell O. S., & Curto, V. (2014). Financial literacy and financial sophistication in the older population. *Journal of Pension Economics and Finance*, *13*(4), 347-366.

[49] Maccoby, E. (1999). *The Two Sexes: Growing Up Apart, Coming Together*. Cambridge (MA): Harvard University Press.

[50] Mahdavi, M., & Horton, N. (2014). Financial literacy among educated women: Room for improvement. *The Journal of Consumer Affairs*, *48*(2), 403-417.

[51] Meier, S., & Sprenger, C. D. (2013). Discounting financial literacy: Time preferences and participation in financial education programs. *Journal of Economic Behavior & Organization*, *95*(C), 159-174.

[52] Molina, J. A., Gimnez-Nadal, J. I., Cuesta, J. A., Garcia-Lazaro, C., & Moreno, Y. (2013). Gender differences in cooperation: Experimental evidence on high school students. *PLoS One*, *8*(12), e83700.

[53] Niederle, M. (2014). Gender. In Kagel, J., & Roth, A. E. (Eds.). *The Handbook of Experimental Economics*, Vol. II. Princeton (NJ): Princeton University Press.

[54] Niederle, M., & Vesterlund, L. (2007). Do women shy away from competition? Do men compete too much? *The Quarterly Journal of Economics*, *122*(3), 1067-1101.

[55] OECD (2014). *Education at a Glance 2014: OECD Indicators*. OECD Publishing.

[56] OECD (2017), *PISA 2015 Results (Volume IV): Students Financial Literacy*, PISA, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264270282-en.

[57] Sansone, D., Rossi, M., & Fornero, E. (2019). "Four bright coins shining at me": Financial education in childhood, financial confidence in adulthood. *The Journal of Consumer Affairs*, forthcoming.

[58] Sutter, M., Kocher, M. G., Ruetzler, D., & Trautmann, S. T. (2013). Impatience and uncertainty: Experimental decisions predict adolescents field behavior. *American Economic Review*, *103*(1), 510-531.

[59] Tannen, D. (1993). *Framing in Discourse*. Oxford: Oxford University Press.

[60] Thaler, R. H., & Sunstein, C. R. (2009). *Nudge: Improving Decisions about Health, Wealth, and Happiness*. New Haven (CT): Yale University Press.

[61] Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, *211*(4481), 453-458.

[62] van den Assem, M. J., van Dolder, D., & Thaler, R. H. (2011). Split or steal? Cooperative behavior when the stakes are large. *Management Science*, *58*(1), 2-20.

[63] van Rooij, M., Kool, C., & Prast. H. (2007). Risk-return preferences in the pension domain: Are people able to choose? *Journal of Public Economics*, *91*(3-4), 701-722.

[64] van Rooij, M., Lusardi, A., & Alessie, R. (2011). Financial literacy and stock market participation. *Journal of Financial Economics*, *101*(2), 449-472.

[65] Verloo, M. M. T., & Lombardo, E. (2007). Contested gender equality and policy variety in Europe: Introducing a critical frame analysis approach. In Verloo, M. M. T. (Ed.). *Multiple Meanings of Gender Equality: A Critical frame Analysis of Gender Policies in Europe*. Budapest: CEU Press.

[66] Zhao, M., Hoeffler, S., & Zauberman, G. (2007). Mental simulation and preference consistency over time: The role of process - versus outcome - focused thoughts. *Journal of Marketing Research*, *44*(3), 379-388.