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Karina Colombo* y Elisa Failache**

Resumen

En este trabajo analizamos el sesgo de deseabilidad social en la información sobre prácticas de crianza a través de preguntas de encuestas. Desarrollamos un método para identificar experimentalmente este sesgo al inducir intencionalmente la deseabilidad social en preguntas sobre prácticas de alimentación mediante la provisión aleatoria de información sobre mejores prácticas. Nuestros resultados muestran un efecto del tratamiento de -0.160 desviaciones estándar en la declaración del consumo de alimentos ultraprocesados por parte de los niños, lo que concuerda con la presencia de sesgo de deseabilidad social. Encontramos un sesgo mayor en mujeres, personas con menor nivel educativo, cuidadores que creen que el desarrollo infantil no es maleable a la inversión parental y aquellos con preferencias de riesgo por encima de la mediana. Si bien la escala de Marlowe-Crowne se correlaciona positivamente con nuestra medida experimental de sesgo de deseabilidad social, nuestro análisis de efectos heterogéneos sugiere que esta variable no elimina completamente el problema.

Palabras claves: Sesgo de deseabilidad social, experimentos, prácticas parentales.

Código JEL: C93, D83, D91.

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Social Desirability Bias: Experimental Evidence on Reporting Parental Practices

Karina Colombo* Elisa Failache†

Abstract

We analyze social desirability bias in the reporting of parenting practices through survey questions. We develop a method to experimentally identify this bias by purposely inducing social desirability in questions on feeding practices through a random information provision on best practices. Our results show a treatment effect of -0.160 standard deviations in the reporting of children ultra-processed food consumption, in line with the presence of social desirability bias. We find a larger bias for women, less educated individuals, caregivers that believe child development is not malleable to parental investment, and those with risk preferences above the median. Although the Marlowe-Crowne scale positively correlates with our experimental measure of social desirability bias, we show that an heterogeneous effect analysis by this variable does not fully remove the issue.

Keywords: social desirability bias, experiments, parental practices.
JEL Codes: C93, D83, D91.

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1 Introduction

The way in which economists conduct research has shifted in the last decades. Empirical work and the use of econometric tools has surged since the 1950's, putting data-driven projects at the center of economic practice (Espinosa et al., 2012; Hamermesh, 2013). Top economic journals are increasingly publishing articles using data collected by the authors and empirical studies based on experiments, with a declining proportion of empirical work based on secondary data (Hamermesh, 2013). In many studies, researchers collect objective information on individuals' actions using administrative data or advanced technologies such as biometrics, which help mitigate concerns about self-reported answers. In other cases, authors use incentive-compatible methods to observe and measure true behavior. However, in numerous cases these type of measurements are either ethically unacceptable or inherently impossible, for example in the case of risky behaviors or subjective beliefs. In this context, measurement reliability has become a central concern, particularly regarding the accuracy and truthfulness of responses in the outcome variables. Ensuring reliable survey measurements remains a crucial challenge, underscoring the need for improved methodologies to elicit honest responses. This paper aims to contributes to the measurement of truthful answers in self-reported survey questions.

The literature has identified multiple factors that can threaten the validity of self-reported data, explained by the fact that the mere act of asking a question can affect individuals' answers. Social scientists have observed that respondents may exhibit a tendency to bias their answers towards what they believe is correct or socially acceptable, leading to a systematic bias in self-reported questions, specially when they refer to sensitive topics. This is known as social desirability bias, and consists on mainly two dimensions: self-deception and other-deception or impression management (Maccoby and Maccoby, 1954; Nederhof, 1985). The first one refers to the reporting of an inaccurate answer that is believed by the respondent, explained by the tendency of viewing oneself more favorably. The second one refers to an intentional misreporting from the respondent to impress or avoid evaluation from the interviewer or researcher (Nederhof, 1985; Graeff, 2005). Another potential source for this bias is given by study participants inferring researchers' objectives, and trying to help them by providing answers more aligned with what they believe are the objectives of the study. This is referred to as experimenter demand effects (De Quidt et al., 2018). Although there is a growing literature on different methods to minimize or identify social desirability bias, the usefulness and validity of this tools is still subject to debate (Flavin and Keane, 2009; Blair and Imai, 2012; Blair, 2015; Höglinger et al., 2016; Höglinger and Jann, 2018; Bischof et al., 2024).

In this study, we developed an experiment to elicit social desirability bias and measure its relevance. We causally identify the bias in reporting parenting practices by purposely inducing social desirability in our treatment group through an information provision experiment on best practices. We asked caregivers of young children to report the feeding habits of their child both in the treatment and control group. However, the treatment group responded to these questions after being exposed to a video on recommendations of feeding practices in

early childhood, while the control group did not receive any information on this topic. Since these questions refer to past habits and the treatment assignment is random, we should not observe different behaviors between groups. However, in the presence of social desirability bias, we expect the treatment group to declare better eating habits compared to the control. Thus, the treatment effect of our intervention allows us to identify the magnitude of the social desirability bias in reporting parenting practices.

Our experiment was implemented in Uruguay. We recruited 2,341 caregivers of children between 0 and 5 years of age, through the country's main university and via social media advertisements. Our questionnaire followed the latest recommendations from the literature on how to reduce social desirability bias, such as administering the questionnaire online without the presence of a surveyor or researcher, and ensuring anonymity through a consent form stating that no individual answers would be disclosed. Additionally, we presented the research objectives in a very general way, without any mention to the analysis of social desirability bias. The survey collected information on sociodemographics variables of the caregiver and the child, personal attitudes, parental practices and beliefs. Both the treatment and control faced the same questionnaire, with two exceptions. First, the order of the questions was different. The treatment group answered the feeding module at the end of the survey after a short video embedded in the questionnaire, while the control group answered this module towards the beginning of the survey. Second, although both groups were exposed to a video on parenting practices in early childhood, the treatment group watched a video on feeding recommendations while the control group watched a video on screen recommendations. In this way, both groups faced analogous interventions on similar parenting topics, but only the treatment group was primed on socially desirable norms before answering the questions on feeding practices. The intervention video described international guidelines on feeding, including the recommendation to avoid ultra-processed foods and to include fish at least once a week. Our outcome variables are an index on the frequency of consumption of ultra-processed foods and an index on the frequency of fish intake, directly assessing compliance with the stated recommendations.

Our results show a treatment effect of -0.160 standard deviations for ultra-processed food consumption, indicating that caregivers in the treatment group report a lower intake of ultra-processed foods compared to the control group. We interpret this as providing evidence for the existence of social desirability bias when reporting parenting practices. On the other hand, we find a null treatment effect on fish consumption. This can by explained by the fact that fish is not an important part of the cultural identity of the country, and by a lower saliency of the recommendation on fish compared to the one on ultra-processed foods in the video Lercari et al. (2023). These findings highlight the importance of considering social desirability bias and the context in which experiments are conducted when analyzing the truthfulness of participants' responses.

Moreover, we studied heterogeneous effects to assess differences in social desirability bias according to personal characteristics. We find a larger magnitude of bias for: women, less educated individuals, caregivers that believe child development is less malleable to parental

investment, and those with risk preferences above the median. This is line with previous literature showing that social desirability bias depends on personal attributes (Camerini and Schulz, 2018; Heerwig and McCabe, 2009; Tang et al., 2022) However, the presence of the social desirability bias in ultra-processed foods is pervasive, as we do not find any subgroup in which we can precisely estimate a null treatment effect.

Finally, we evaluate the efficiency of the Marlowe-Crowne social desirability scale to identify social desirability bias in survey answers, following the recent trend in economic studies of using this scale to test the robustness of their findings. To do this, researchers usually estimate their results in individuals with high and low values in the Marlowe-Crowne scale, interpreting the treatment effects for those with lower values as unaffected by social desirability (Armand et al., 2021; Bandiera et al., 2022; Dhar et al., 2022; Dizon-Ross and Jayachandran, 2022; Rodríguez Chatruc and Rozo, 2022; Diaz et al., 2023; Amaral et al., 2024; Czura et al., 2024; Mehmood et al., 2024). We analyze heterogeneous effects by considering caregivers below and above the median in the 9-items and 5-items Marlowe Crowne scale (Manganelli et al., 2000; Hays et al., 1989), We find that individuals with higher values in this scale exhibit a considerably larger social desirability bias, with a treatment effect of -0.231 standard deviations for those caregivers above the median vs an effect of -0.095 for those below the median in the 9-items scale. Results with the 5-item scale are very similar. However, both groups of individuals show a social desirability bias statistically larger than zero and of considerable size. These results show that although the Marlowe-Crowne scale correlates with our experimental measure of social desirability bias, we cannot assume that those with values below the median are unaffected by this bias, questioning the effectiveness of this scale as it is usually employed in economic papers.

Our study contributes to the literature in several ways. We experimentally identify social desirability bias in the reporting of parenting practices in early childhood. Although the questions on practices that affect child development are likely to be subject to social desirability, this topic has not been much addressed in the previous literature. In addition, we provide evidence on different gradients of social desirability bias across relevant population subgroups, furthering the understanding of potential risks in survey measurements. Finally, we analyze the effectiveness of the most popular personality inventory to measure individual propensity to social desirability, providing useful evidence for the advancement of empirical tools in economic studies.

This paper contributes to the literature on methods to elicit truthful survey answers when we suspect the presence of social desirability bias. Some authors have proposed indirect response survey methods to avoid misreporting to sensitive questions. Among these, the most popular one is the list experiment, also referred to as the item count or the unmatched count technique (Raghavarao and Federer, 1979; Miller, 1984; Dalton et al., 1994). It is based on hiding individual responses to a sensitive question, by only asking respondents to count the number of positive answers within a list including this item among other control questions. Other authors have proposed randomized response techniques, in which the researcher introduces random noise to the respondent's answer through, for example, a coin or dice, making

it impossible for anyone other than the respondent to identify an individual answer (Warner, 1965; Greenberg et al., 1969; Boruch, 1971; Tracy and Fox, 1981; Kuk, 1990). There are several variants of this method, such as the forced response design, the mirrored question design and the unrelated question design (Blair, 2015). Additionally, similar methods have been developed that do not require the use of a randomization device, such as the triangular and crosswise models (Yu et al., 2008; Tan et al., 2009). Although attractive in theory, these methods may have several disadvantages when being implemented. Respondents may not always believe that their responses cannot be identified, they may pose a considerable cognitive burden on the respondent and they employ the more-is-better assumption discarding the existence of false positives, among other things (Blair and Imai, 2012; Blair, 2015; Höglinger et al., 2016; Höglinger and Jann, 2018; Kramon and Weghorst, 2019; Kuhn and Vivyan, 2022; Bischof et al., 2024). This implies that by using these methods we cannot corroborate if the difference in answers between the indirect and direct questioning is due to social desirability being induced.

This study also contributes to the specific literature on experimenter demand effects. Among these, De Quidt et al. (2018) propose a technique to estimate bounds for demand effects by deliberately inducing this bias at different intensities. In this line, Mummolo and Peterson (2019) randomly provide information to study participants on the researcher's objective to empirically test the presence of experimenter demand effects. Our paper also relates to the growing literature on the effects of social norms on behaviour, where several studies experimentally assess changes in attitudes when participants are being observed (DellaVigna et al., 2012, 2016; Bursztyn et al., 2020). However both this strands of the literature refer to one specific source of social desirability bias, either the one motivated by trying to please the researcher or the one motivated by other people potentially judging our actions.

Our work contributes by experimentally measuring the extent of social desirability bias. The method we use differs from indirect response survey methods, in that we do not try to remove the pressure of giving socially desirable answers. On the contrary, we deliberately provide incentives to give socially desirable answers to identify the magnitude of the bias. This is more in line with the literature on social norms and experimenter demand effects, but we also consider the self-deception issue that might bias answers even when they are completely private. Furthermore, we assess the validity of a popular scale for directly measuring social desirability, providing evidence to improve the research design in empirical studies.

The rest of this paper is structured as follows. Section 2 describes the experimental design, including the sample, questionnaire, intervention and outcome variables. Section 3 describes the empirical strategy. Section 4 shows our main results, and Section 5 presents some final remarks.

2 Experimental Design

To verify the existence of social desirability bias when evaluating interventions using survey data and to estimate its magnitude, we compare responses on feeding-related parenting

practices between caregivers belonging to the treatment and control group. Participants in the treatment group first completed an online questionnaire on background characteristics, parenting practices, and beliefs, and personal attitudes. Towards the end of the survey they were exposed to a video embedded in the questionnaire outlining feeding recommendations in early childhood, and immediately after this, they answered a module on their child's feeding habits. On the other hand, the control group completed an analogous questionnaire with one key difference. They answered the feeding module at the beginning of the survey together with other parenting practices, without receiving any previous information on best practices. At the end of the survey they were also exposed to a video, but on screen exposure recommendations. Since the questions on feeding refer to past habits, they could not have been affected by the intervention video by construction. Therefore, mean differences in feeding practices between treatment and control provide an estimate of social desirability effects. Below, we present the experimental design in detail.[1]

2.1 Sample

Eligible individuals were primary caregivers of children aged between 0 and 5, of at least 18 years of age, living with their child at least 3 days a week. Since our unit of analysis is the parent-child dyad, caregivers with more than one child were randomly asked to answer for their older or younger child. The experiment was implemented between March 9th and May 15th of 2023. Survey participation was encouraged by the use of monetary incentives: respondents who finished the survey participated in four gift card lotteries of around 100 USD at well-known retailers. Our recruitment process involved the combination of different sample frames to maximize power under a limited budget. First, we used the sample frame of students and workers from Uruguay's main university, *Universidad de la República* (UDELAR). Workers and students with children under their care received an institutional email inviting them to participate in a survey on the situation of early childhood in Uruguay for parents with children under 6 years of age, and the link to access the questionnaire. In this email they also received a link to an article at the university web page explaining that a group of researchers were undertaking this study and stating the same information on the participation procedure to increase credibility. The email was sent to 12.362 email addresses, obtaining 813 valid surveys. Second, we advertised our study in two social media sites, Facebook and Instagram, through a recruiting company. The advertisement included an invitation to participate in an incentivized survey and a reference to early childhood rearing practices either through text or image. By clicking on the add they were taken to questionnaire. The actual text and image for the add changed slightly during the recruitment period following real-time data on its efficacy. After almost a month we obtained 4,286 clicks and 1,272 valid surveys. Finally, we obtained an additional 256 surveys through the recruiting company historic database with an invitation similar to the social media one. We show the recruitment invitations for each sample frame in Section A of the Appendix.

[1] The survey was part of a larger project aimed at improving parental practices on screen exposure and feeding in early childhood through an informational experiment.

The final sample is 2,341 caregivers, of which 1,168 were assigned to the control group and 1,173 to the treatment group. As expected, our sample is biased towards caregivers with high educational levels. According to our computations using data from the Uruguayan National Institute of Statistics, the distribution of caregivers of children aged 0 to 5 according to their highest educational level is: 14% primary, 60% secondary and 26% tertiary education. The distribution of caregivers in our sample is: 1% primary, 22% secondary and 77% tertiary education. We show descriptive statistics of our sample in Section B of the Appendix

2.2 Questionnaire

After clicking the link to enter the questionnaire, all respondents faced a pre-screen survey with the informed consent form and a short set of questions to determine eligibility. The informed consent form explained the objectives of the survey, what was involved in participating in the survey, the principal investigators of the project, and the data protection policy. In particular, we stated that the survey was designed by researchers from *Universidad de la República* (UDELAR) and the European University Institute (EUI), with the objective of collecting information about the situation of early childhood development in Uruguay. We emphasized the importance of reading the questions carefully and answering them with honesty, stating that we were not expecting any specific answers (there were no right or wrong answers). We also made clear that the survey was voluntary and that no information allowing to identify participants was going to be published. It is worth mentioning that the only identification data we requested was either the email or cellphone of the respondents. The informed consent form is presented in Section C of the Appendix.[2]

The core of the questionnaire started with a section related to sociodemographic characteristics of the respondent and the household. The following section was about the child with different subsections on: background characteristics of the child, child activities, and parental practices. The final section of the survey was about personal attitudes of the respondent and it consisted on: questions on parental beliefs regarding screen exposure and child development, 10 items from the Marlowe-Crowne social desirability scale (SDS), a question to measure risk aversion and a question to measure patience. The belief question on child development asked about the malleability of children's skills to parental investment as in Bhalotra et al. (2020). We asked caregivers about their level of agreement with the following statement: "each child learns at his/her own pace; there's nothing I can do to change that." For the Marlowe-Crowne SDS we followed the 5-item reduced version by Hays et al. (1989) and the 9-items reduced version by Manganelli et al. (2000). For the module on risk and time preferences we followed the qualitative measures in Falk et al. (2018) on an 11-point Likert scale. Finally, we presented the intervention video on screens or feeding recommendations embedded within the survey, with two follow-up questions regarding its usefulness. The questionnaire ended with the possibility of downloading a digital leaflet with

[2]We also tried to incentive truthful-telling by stating in the consent form that parents could download personalized recommendations based on their answers on how to improve parental practices. However, anecdotal evidence indicates that in many cases participants did not fully understand that their responses were going to be used as input for personalizing the recommendations, decreasing the effectiveness of this incentive.

personalized recommendations according to declared practices on either screens or feeding, depending on the treatment group. The main difference between the treatment and control group refers to the position in which feeding practices were asked. In the first case, feeding practices were asked after the intervention video and follow-up questions. In the second group, feeding practices were asked in the parental practice module, and no video on feeding recommendations was shown. We present the comparison between the two questionnaires in Table 1.

Table 1: Comparison Between the Treatment and Control Group Questionnaire

Treatment		Control		Difference
Module	Nº of questions	Module	Nº of questions	
1. Consent Form	1	1. Consent Form	1	None
2. Eligibility questions	5	2. Eligibility questions	5	None
3. Household and caregiver characteristics	15	3. Household and caregiver characteristics	15	None
4. Sociodemographics of the child	5	4. Sociodemographics of the child	5	None
5. Child activities	7	5. Child activities	7	None
		6. Feeding practices	3	Module was asked in a different position
6. Screen practices	24	7. Screen practices	24	None
7. Personal attitudes	12	8. Personal attitudes	12	None
8. Video	1	9. Video	1	Video content
9. Video usefulness	2	10. Video usefulness	2	None
10. Feeding practices	3			Module was asked in a different position
11. End of survey and option to download leaflet	1	11. End of survey and option to download leaflet	1	None

There were two additional differences in the questionnaire for specific sub-samples. For the UDELAR sample we added one question on their relationship with the university, either student, professor or worker, and another question on the school they belonged to. For the group of caregivers answering for children younger than six months, the feeding module contained different questions since recommendations are very dissimilar, as detailed in the following section. The questionnaire was developed using Qualtrics software.

2.3 Intervention Video and Questions on Feeding Practices

The video embedded in the treatment group questionnaire provided information on feeding recommendations in early childhood based on scientific literature on the topic and on recommendations made by trustworthy institutions: American Academy of Pediatrics, Spanish Association of Pediatrics, UNICEF Uruguay and the Uruguayan Ministry of Public Health. The video duration was 1 minute and 35 seconds with a script of 259 words. We kept the video aesthetic light, with a colorful graphic design, playful background music and a script that focused on a positive message rather than on making parents feel guilty. We addressed the following topics: feeding recommendations by age, foods that should be avoided, day-to-day tips on improving feeding quality, and, cooking and eating as a family. The video started by emphasizing the importance of feeding in early childhood, and then stating the main recommendations by age: offer exclusively breast milk for the first 6 months of life, and after that age, supplement it by offering in each meal an iron-rich food, an energy-rich food, fruits, and vegetables. Then it listed some foods that should be avoided: ultra-processed foods such as juices, packaged desserts and nuggets; salt or added sugar until one year of age; cold cuts and sausages; squeezed juices before until one year of age; and mate, coffee and tea. The video concluded with some day-to-day tips in order to encourage homemade food and healthy eating habits, such as offering fish once a week, including seasonal fruits and vegetables, using uncooked oil, and offering water to quench thirst. We show the video script in Section D of the Appendix.

The module on feeding practices differed according to the age of the child. For those 6 months or older, it contained questions regarding two of the recommendations on the topic: ultraprocessed foods and fish intake. The first question was "usually, does the child eat any of these foods...?" and then listing the following: packaged filled cookies; snacks (potato chips, etc.); packaged nuggets, hot dogs, hamburgers; cold cuts (ham, salami, "mortadella"); packaged potato preparations (noisettes, french fries, croquettes, mashed potato); packaged dairy desserts; ice creams or sweets (candies, lollypops, or others); and soft drinks, artificial juices, or flavored waters. The respondent had to select one of the following five options: "yes, almost every day"; "yes, several days a week"; "yes, some days a week"; "yes, very occasionally"; "he/she does not eat this". The second question was about fish eating habits,"how often does the child usually eat fish?", with potential answers being: "at least once a week", "at least once a month, but not every week", "less than once a month", "he/she never eats fish, we do not usually eat it at home"; "he/she never eats fish, he/she is allergic".[3] This allows us to assess social bias in misreporting for two recommendations that reflect very different social norms in the Uruguayan context. While the consumption of ultraprocessed foods is very extended, average fish intake is very low compared to what is recommended (Lercari et al., 2023).

For caregivers answering for children with less than 6 months we covered the recommendation of exclusive breastfeeding. We first asked about feeding practices, "usually, which food

[3]There was an additional question regarding the frequency of homemade food but due to a survey programming error the wording was slightly different between the treatment and control group. Therefore, we could consider this question in our analysis.

do you give to him/her?", with the following options: "breast milk only (through breast, baby bottle or other)", "only formula". "breastmilk and formula", "milk and other foods". If the answer was different from the first option, we also asked the reason for deviating from the recommendation,"why didn't he/she receive only breast milk?', with answer options: 'because of a medical recommendation", "because I didn't have enough milk or the baby was not latching on well", "because of maternal work" or "or other reasons". Since our sample has only 151 respondents in this age bracket, we do not include them in our analysis of results due to insufficient power.

Both versions of the feeding module were designed following the following the questionnaires used in Nutrition, Child Development and Health Survey (NCDHS) from the National Institute of Statistics and the Ministry of Social Development.

3 Empirical Strategy

To identify the social desirability bias we exploit the variation in the order of the feeding questions between the treatment and control group. Since these questions refer to past habits and the treatment assignment is random, we do not expect any treatment effects following the video intervention. However, in the presence of social desirability bias, we would expect the treatment to declare better eating habits compared to the control. To test this hypothesis we estimate the following model:

$$y_i = \alpha + \beta \mathrm{T}_i + \textstyle\sum_m \gamma_m X_i^m + \epsilon_i$$

Where i refers to a parent-child dyad, y_i are the outcomes of interest, T_i is a binary indicator for being assigned to treatment, X_i^m are observable characteristics of the household, caregiver and child defined before the intervention, and m refers to the number of covariates. Our coefficient of interest is β, which provides a measure of the social desirability bias.

Our outcome variables are computed using the questions regarding feeding practices in children older than 6 months. First, we construct an index for the overall consumption of ultra-processed foods considering the intake frequency of eight type of foods (as detailed in previous section). We use factor analysis and standardize the index using the sample mean and standard deviation. We obtain a variable that increases when the overall consumption of ultra-processed food is higher. Second, we consider the question on the frequency of fish consumption and standardize it using the sample mean and standard deviation. We obtain a variable that increases with more fish consumption. With respect to the covariates, we control for caregiver, child and household characteristics. These variables were selected based on their outcome prediction ability and on imbalances observed between the treatment and control group. We show the balance between the treatment and control group in Tables E.2 and E.3 of the Appendix. Among caregiver attributes we include: age, years of education, hours of work, number of offspring in the household, an index on the parental belief regarding the malleability of child development, and an index on parental beliefs on screens. Among child attributes we consider: age in months, hours of preeschool, an index for adult support

for learning, and an index for the quality of screen exposure. We also include the household availability of tablets and fixed effects for the sample origin. We detail the construction of these variables in E.4 of the Appendix. We impute missing values with the sample medians, since these covariates should not affect identification.

In addition to the estimation of social desirability bias for the overall sample, we estimate if effects are heterogeneous according to pre-treatment attributes of the caregiver by interacting our treatment variable with each attribute of interest. We define the attributes according to what the literature has pointed out to be relevant in explaining social desirability: gender, educational level and personality traits (Hebert et al., 1997; Heerwig and McCabe, 2009; Camerini and Schulz, 2018; Tang et al., 2022). While our survey does not include direct measures of personality, we use Falk et al. (2018) measurements of risk and time preferences as proxies for personality traits of the caregivers. Moreover, we consider caregivers belief on the malleability of child development to parental investment (Bhalotra et al., 2020), since those who believe that their actions do not affect their child development should be less prone to exhibit social desirability bias.

We obtain our estimates through Ordinary Least Square (OLS) regressions, and estimate standard errors using robust standard errors.

4 Results

4.1 Main Results

We present the magnitude of the social desirability bias in survey responses related to feeding practices in early childhood, as identified by our treatment experiment. Table 2 shows our treatment coefficient associated with the difference in responses in our outcome variables resulting from exposure to a video on best practices before answering the survey items. Column 1 shows that caregivers in the treatment group report that their children consume fewer ultra-processed foods compared to the control group. The size of the effect is considerable, amounting to 0.160 of a standard deviation (p-value of 0.000), doubling the control group average. Given that the video could not change caregivers' prior habits and that the treatment was randomized, we interpret this difference as evidence of social desirability bias among caregivers. On the other hand, column 2 shows no effect on parental reports regarding fish consumption.

This difference could be explained by the nature of social desirability bias, which drives individuals to align with perceived social expectations. Fish consumption is not widespread in Uruguay and, unlike meat, is not deeply ingrained in the country's cultural identity (Lercari et al., 2023). Moreover, it could also be explained by the saliency of the ultraprocessed-foods recommendation vs the fish recommendation. The video emphasized that ultra-processed foods should be avoided, with three statements related to this topic accounting for 39/259 words in the video script. Conversely, the video stated only once that a fish meal should be provided once a week, accounting for 15/259 words in the video script. In addition, the framing of these recommendations differed, with a negative connotation in the case of

ultra-processed foods and a positive connotation in the case of fish.

As robustness we estimate these regressions without the inclusion of control variables, obtaining the same results (Table F.5 in the Appendix).

Table 2: Social Desirability Bias in Feeding Practices

	Ultra-processed Foods	Fish
Treatment	-0.160***	0.012
	(0.032)	(0.042)
P-Value	0.000	0.776
Control Mean	0.080	0.010
Observations	2176	2156

Notes: Reported estimates are obtained from an OLS regression controlling for pre-treatment caregiver, child and household characteristics. Control variables are presented in Table E.4 in the Appendix. Treatment takes value 1 when the video on best feeding practices was shown before the survey module on feeding habits. The dependent variables *Ultra-processed Foods* and *Fish* are standardized variables with increasing values showing higher consumption of ultra-processed foods or fish, respectively. Robust standard errors are reported in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

One possible concern with our experiment is that our results may be influenced by the fact that the questions were asked at different stages of the survey. If respondents had a preference or aversion for certain survey topics (e.g., screen use or feeding habits), our treatment could have biased the sample of those who completed the survey. A balance test analysis comparing the treatment and control groups shows that almost all variables are balanced (Tables E.2 and E.3 in the Appendix). Additionally, we regress three different variables of participants behaviour regarding the survey itself on our treatment variable: (1) completing the questionnaire vs. not completing it, (2) clicking play to watch the video vs. not clicking, and (3) leaving the questionnaire after watching the video vs. finishing the questionnaire. We do not find any significant treatment effect on any of these variables (p-values of 0.68, 0.50, and 0.34, respectively). Another potential issue related to the question order is that, for the treatment group, the feeding-related questions appear at the end, which could lead to respondent fatigue. To assess whether this played a role, we regress time spent on the feeding practices module on our treatment variable. We do not find any significant effect (p-value of 0.21 and a point estimate of -0.08 minutes, with a control group average duration of 1.35 minutes). We also analyze the effect of treatment on the total duration of the questionnaire and find no significant effect (p-value of 0.49).

Another issue regarding the interpretation of our results is the potential influence of the experimenter demand effect. It is possible that our findings are not driven by caregivers' perceptions of societal expectations but rather by their desire to help the experimenter confirm their hypothesis. To assess this we evaluate heterogeneous effects by sample origin, since the UDELAR sample was directly contacted by the study researchers through email, deriving in a more personalized interaction compared to the social network sample. We find that the treatment effect is observed in both samples and we cannot reject the null hypothesis

of equal effects, although the coefficient is slightly higher for respondents recruited via social networks (Table 3).[4] This result leads us to believe that, although the experimenter demand effect may partially explain our results, social desirability bias is a more complex and broader phenomenon.

Table 3: Social Desirability Bias in Feeding Practices by Sample Origin

	Ultra-processed Foods	Fish
Treatment - Social Network	-0.180***	-0.016
	(0.000)	(0.763)
Treatment - UDELAR	-0.124**	0.063
	(0.021)	(0.353)
P-Value: Social Network=UDELAR	0.408	0.356
Control Mean - Social Network	0.029	0.002
Control Mean - UDELAR	0.176	0.025
Observations	2176	2156

Notes: Estimates obtained through OLS regressions including a binary indicator of the variable considered for the heterogeneous effect and an interaction between this variable and the treatment indicator, controlling for pre-treatment caregiver, child and household characteristics. Control variables are presented in Table E.4 in the Appendix. Sample origin is excluded as a control variable. Treatment takes value 1 when the video on best feeding practices was shown before the survey module on feeding habits. The dependent variables *Ultra-processed Foods* and *Fish* are standardized variables with increasing values showing higher consumption of ultra-processed foods or fish, respectively. In each panel the first four rows report the treatment effects for each group, with stars indicating their significance level and p-values in parentheses. The fifth row reports the p-value for the test of equal effects (interaction term). Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4.2 Heterogeneous Effects

To better understand our results, we perform a heterogeneous effects analysis based on variables that could be related to social desirability bias, including gender, years of education and personality traits (patience, risk, belief on malleability of child development). Table 4 presents the results according to the caregiver's gender. Our analysis suggests that social desirability bias is stronger for women, with a coefficient two times higher than for men. However, due to the low number of male caregivers responding to the survey, the estimation of the treatment effect for this group is not precise, and we cannot reject the hypothesis of equal effects. The higher effect for women aligns with previous literature showing that women exhibit greater social desirability bias (Camerini and Schulz, 2018; Tang et al., 2022) Additionally, since our experiment focuses on parental practices, gender roles and the perception of women as primary caregivers may play an additional role in this effect. We do not find any effects on parental reports of fish consumption.

[4] We also estimate the same regression on the subsample of caregivers with 10 or more years of education to focus on differences by sample origin, since only 1.4% of the UDELAR sample has less than 10 years of schooling . Table F.6 in the Appendix shows similar results.

Table 4: Social Desirability Bias in Feeding Practices by Gender

	Ultra-processed Foods	Fish
Treatment - Men	-0.082	-0.125
	(0.425)	(0.307)
Treatment - Women	-0.171***	0.030
	(0.000)	(0.504)
P-Value: Men=Women	0.413	0.233
Control Mean - Men	0.109	0.165
Control Mean - Women	0.075	-0.011
Observations	2176	2156

Notes: Estimates obtained through OLS regressions including a binary indicator of the variable considered for the heterogeneous effect and an interaction between this variable and the treatment indicator, controlling for pre-treatment caregiver, child and household characteristics. Control variables are presented in Table E.4 in the Appendix. Caregiver's gender is excluded as a control variable. Treatment takes value 1 when the video on best feeding practices was shown before the survey module on feeding habits. The dependent variables *Ultra-processed Foods* and *Fish* are standardized variables with increasing values showing higher consumption of ultra-processed foods or fish, respectively. In each panel the first four rows report the treatment effects for each group, with stars indicating their significance level and p-values in parentheses. The fifth row reports the p-value for the test of equal effects (interaction term). Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The analysis by years of education of the caregiver shows that social desirability bias is significant for both groups of caregivers regarding ultra-processed foods (Table 5). The absolute effect is significantly higher for those who did not attained tertiary education. Caregivers with less than 12 years of schooling show a treatment effect of more than double the value of caregivers with more than 12 years: -0.269 (p-value of 0.000) vs -0.115 (p-value of 0.002). These results are in line with previous work suggesting that more educated people has less social desirability bias (Camerini and Schulz, 2018; Heerwig and McCabe, 2009). However, when considering the control means by years of education, the relative social desirability bias is higher for the more educated group. Again, we do not find any effects for the fish question.

Table 5: Social Desirability Bias in Feeding Practices by Years of Education

	Ultra-processed Foods	Fish
Treatment - 12 years or less	-0.269***	0.114
	(0.000)	(0.168)
Treatment - More than 12 years	-0.115***	-0.028
	(0.002)	(0.564)
P-Value: 12 years or less=More than 12 years	0.038	0.138
Control Mean - 12 years or less	0.445	-0.236
Control Mean - More than 12 years	-0.053	0.100
Observations	2176	2156

Notes: Estimates obtained through OLS regressions including a binary indicator of the variable considered for the heterogeneous effect and an interaction between this variable and the treatment indicator, controlling for pre-treatment caregiver, child and household characteristics. Control variables are presented in Table E.4 in the Appendix. Caregiver's years of education is excluded as a control variable. Treatment takes value 1 when the video on best feeding practices was shown before the survey module on feeding habits. The dependent variables *Ultra-processed Foods* and *Fish* are standardized variables with increasing values showing higher consumption of ultra-processed foods or fish, respectively. In each panel the first four rows report the treatment effects for each group, with stars indicating their significance level and p-values in parentheses. The fifth row reports the p-value for the test of equal effects (interaction term). Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The literature also suggests that social desirability bias could be linked to personality traits. We conduct an heterogeneous effects analysis using caregivers' risk tolerance and patience as proxies for personality traits (Tables F.7 and F.8 in the Appendix). We find effects across all caregiver subgroups for habits on ultra-processed foods, with point estimates ranging from 0.106 to 0.218 standard deviations. While we do not observe differences based on caregivers' patience, we find that social desirability bias is higher among caregivers who are more risk-loving. Caregivers with risk preferences above the median show a treatment effect of double the size to those below the median, -0.218 vs -0.106 standard deviations, while having similar control means.

Finally, we analyze the results according to caregivers beliefs on the malleability of child development to parental investment. This analysis is relevant because we expect parents who believe they cannot influence their child learning to exhibit lower social desirability bias in reporting parenting practices, as they perceive themselves as less responsible for the child's outcomes. Table 6 points to this hypothesis. Parents who believe their actions can impact child development are more likely to report behaviors aligned with the recommended practices regarding ultra-processed food consumption, showing a treatment effect of -0.187 standard deviations. While the difference between treatment effects is not statistically significant, the coefficient for those who believe child development is not malleable is half the size and not significant. It is worth noting that power might be an issue in this case.

Table 6: Social Desirability Bias in Feeding Practices by Malleability of Child Development

	Ultra-processed Foods	Fish
Treatment - Not malleable	-0.095	0.046
	(0.291)	(0.662)
Treatment - Malleable	-0.187***	0.043
	(0.000)	(0.487)
P-Value: Not malleable=Malleable	0.357	0.986
Control Mean - Not malleable	0.147	-0.039
Control Mean - Malleable	-0.049	0.056
Observations	1301	1288

Notes: Estimates obtained through OLS regressions including a binary indicator of the variable considered for the heterogeneous effect and an interaction between this variable and the treatment indicator, controlling for pre-treatment caregiver, child and household characteristics. Control variables are presented in Table E.4 in the Appendix. Caregiver's belief on child development is excluded as a control variable. Treatment takes value 1 when the video on best feeding practices was shown before the survey module on feeding habits. The dependent variables *Ultra-processed Foods* and *Fish* are standardized variables with increasing values showing higher consumption of ultra-processed foods or fish, respectively. In each panel the first four rows report the treatment effects for each group, with stars indicating their significance level and p-values in parentheses. The fifth row reports the p-value for the test of equal effects (interaction term). Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4.3 Effectiveness of the Marlowe-Crowne Scale

There is a growing literature in economics assessing the validity of treatment effects to social desirability bias, by incorporating a social desirability scale as a control in their regressions or by estimating heterogeneous effects according to this (see for example Armand et al. (2021); Bandiera et al. (2022); Dhar et al. (2022); Dizon-Ross and Jayachandran (2022); Rodríguez Chatruc and Rozo (2022); Diaz et al. (2023); Amaral et al. (2024); Czura et al. (2024); Mehmood et al. (2024)). The most popular index used for this purpose is the Marlowe-Crowne social desirability scale, which consists on 33 survey items to assess an individual's propensity to give socially desirable answers (Crowne and Marlowe, 1960). Each item states a fact about oneself that is culturally valued or sanctioned, but that is very unlikely to be true. Each socially desirable answer sums one point in the overall index. Studies usually consider different shorter versions of the Marlowe-Crowne scale Tan et al. (2022). In our questionnaire we included the 9-items short-version from Manganelli et al. (2000) and the 5-item version from (Hays et al., 1989) (Section G in Appendix). We analyze the magnitude of our causally estimated social desirablity bias in relation to this instrument, as a way to assess the effectiveness of using the Marlowe-Crowne scale to evaluate the robustness of results to this bias.

Table 7 presents the results of doing an heterogeneous effect analysis by caregivers' score in the Marlowe-Crowne 9-items scale. We consider those with an index below the median as having low social desirability (6 or less), and those with an index above the median as having high social desirability (7 to 9). Our data shows that caregivers with higher values in the 9-items Marlowe-Crowne scale present a social desirability bias in the reporting

of ultra-processed foods of more than double the size compared to those with low social desirability: -0.231 (p-value 0.000) and -0.095 (p-value 0.027), respectively. We do not observe a statistically significant social desirability bias for the fish intake reporting.

Table 7: Social Desirability Bias in Feeding Practices by the 9-items Marlowe-Crowne Scale

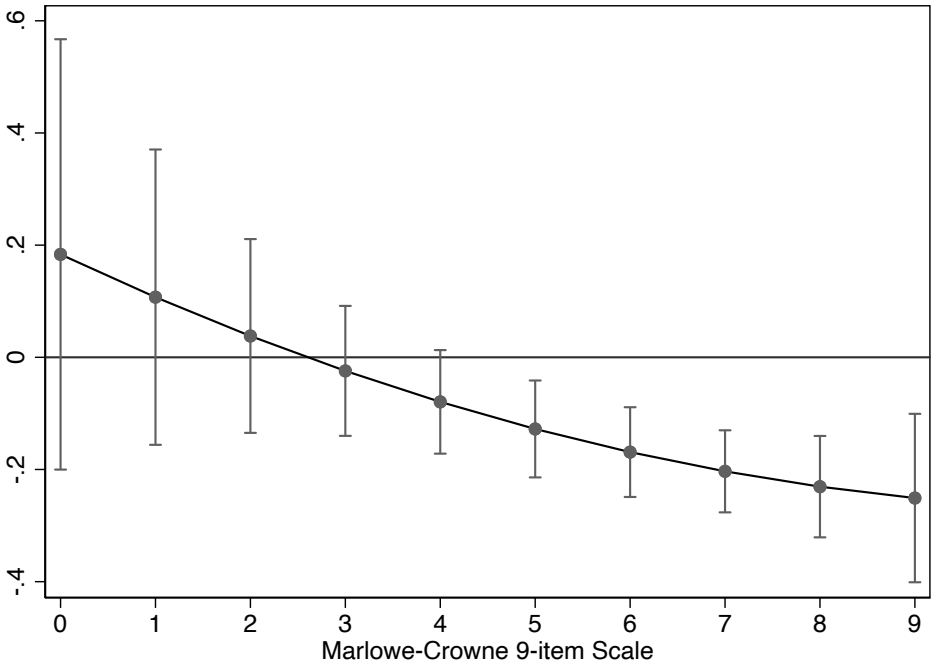
	Ultra-processed Foods	Fish
Treatment - Below median	-0.095**	0.027
	(0.027)	(0.642)
Treatment - Above median	-0.231***	-0.004
	(0.000)	(0.950)
P-Value: Below median=Above median	0.032	0.715
Control Mean - Below median	0.068	-0.013
Control Mean - Above median	0.093	0.036
Observations	2176	2156

Notes: Estimates obtained through OLS regressions including a binary indicator of the variable considered for the heterogeneous effect and an interaction between this variable and the treatment indicator, controlling for pre-treatment caregiver, child and household characteristics. Control variables are presented in Table E.4 in the Appendix. Treatment takes value 1 when the video on best feeding practices was shown before the survey module on feeding habits. The dependent variables *Ultra-processed Foods* and *Fish* are standardized variables with increasing values showing higher consumption of ultra-processed foods or fish, respectively. In each panel the first four rows report the treatment effects for each group, with stars indicating their significance level and p-values in parentheses. The fifth row reports the p-value for the test of equal effects (interaction term). Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

We perform the same analysis considering a threshold of 7 or less as low social desirability, and 8 or more as high social desirability, and also considering responses above or below the median in the 5-item Marlowe-Crowne scale (Tables F.9 and F.10 in Appendix). Results are very similar in both cases.

Additionally, we treat the scale as a continuous variable and interact it with our treatment indicator including a linear and quadratic term, to evaluate differential effects in the reporting of ultra-processed foods practices across the distribution of this index. Figure F.9 shows our estimated treatment effects for each value in the distribution of the 9-items Marlowe-Crowne scale. The magnitude of coefficient decreases as the social desirability scale increases. This means that the higher the social desirability score, the lower the reporting of ultra-processed foods consumption of treated caregivers with respect to controls. Interestingly, for treated caregivers with low social desirability, the experimentally identified social desirability bias is positive —meaning they report higher consumption of ultra-processed foods— though the coefficients are not statistically different from zero. The effect becomes negative and statistically signifcnat once the social desirability score reaches 5 points, and continues to decrease thereafter. We observe similar results when analyzing differential effects using the scale as a discrete variable: positive effects for caregivers with low social desirability, no significant effects for those in the middle of the scale, and negative effects for caregivers with higher social desirability (Figure F.1).

Figure 1: Treatment Effects by the 9-items Marlowe-Crowne Scale



5 Final Remarks

The presence of social desirability poses a threat to the internal validity of studies based on survey questions. In this study we experimentally identified social desirability bias in parenting practices and showed that it is of considerable magnitude. This bias is present even when implementing best practices to reduce the issue: we conducted the survey online without the presence of enumerators or researchers; we stated in the consent form that the survey was anonymous; we did not ask for personal data except for the email address or phone number; we did not inform participants about differences in the intervention video; and we did not specify that we were studying feeding practices or social desirability issues. Despite all these strategies to have an accurate and truthful answer, we still observe a treatment effect.

We also show that, although the Marlowe-Crowne scale positively correlates with our experimental measure of social desirability bias, an heterogeneous effect analysis by this variable does not fully remove the issue. We find significant treatment effects below and above the median, questioning the effectiveness of a popular method in economics to evaluate the robustness of results. Nonetheless, the magnitude of the bias is in fact significantly higher for individuals obtaining very high scores in the scale, pointing to the fact that individuals show a gradient in their propensity to provide socially desirable answers. A promising future line of research involves the design of survey scales than can be calibrated against experimental measures of the social desirability bias.

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Appendix

A Recruitment Procedure

A.1 Invitation Email for Recruitment at UDELAR

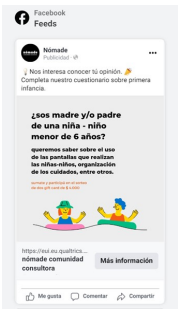
The UDELAR sample received the following email:

> Hello!
>
> We are writing to invite you to participate in a survey on the situation of early childhood in Uruguay, for mothers and fathers with boys and girls from 0 to 5 years old.
>
> To complete it, click on the following link: https://eui.eu.qualtrics.com/jfe/form/SV_9Xmxx3R7OBb1dRA?Q_CHL=gl&Q_DL=XOj02gREUZpN7Kj_9Xmxx3R7OBb1dRA_CGC_waUrHEXrZLnchDd
>
> You can read more in the following article: https://udelar.edu.uy/portal/2023/03/invitacion-para-encuesta-sobre-desarrollo-en-la-primera-infancia - in-uruguay/
>
> Thank you very much for your time!
>
> Elisa Failache - Researcher at the Institute of Economics from FCEA
> Karina Colombo - Researcher at the European University Institute

A.2 Advertisements for Recruitment Through Social Media

The advertisement through Facebook and Instagram had different versions since the recruitment company tuned the image, text and target audience according to the live performance in terms of clicks and finished surveys. The three versions are shown in Table A.1.

Table A.1: Social Media Advertisements

Image	Text	Dates	Target Audience	Clicks
	Complete our survey and enter gift cards giveaways. We value your opinion. [Text on the image: Do you have children younger than 6 years of age?]	17/03/2023 to 22/03/2023	People living in Uruguay; 18-55 years old; all genders.	687
	Complete our survey and enter giveaways for supermarket gift cards of $ 4000 . We are interested in your opinion.	23/03/2023 to 27/03/2023 and 02/04/2023 to 07/04/2023	People living in Montevideo and Canelones; 20-46 years old; all genders.	187 + 204
	We are interested in your opinion. Complete our questionnaire about early childhood. [Text on the image: Are you a parent of a children younger than 6 years of age? We want to learn about children's screen use, caregiving arrangements, among other things. Join us and participate in the giveaway of two gift cards for $4000.]	08/04/2023 to 14/04/2023 and 16/04/2023 to 19/04/2023	People living in Montevideo, Canelones, Salto, Paysandú, Florida, Maldonado and Colonia; 20-46 years old; all genders.	1431 + 1777

B Sample Descriptive Statistics

Table B.1: Descriptive Statistics of the Household, Caregiver and Child

	Mean	SD	Obs.
Living in Mdeo	0.62	0.49	2,341
Number of People	3.67	0.98	2,341
Internet at Home	0.89	0.31	2,341
TV with Cable or Internet	1.52	0.94	2,332
Number of Computers	1.62	1.01	2,298
Number of Tablets	0.46	0.65	2,291
Number of Smartphones	2.20	0.87	2,326
Female	0.88	0.32	2,341
Age	34.54	5.85	2,341
Years of Education	14.71	3.37	2,341
Number of Offsprings (0-5)	1.19	0.42	2,341
Living with Couple	0.84	0.37	2,341
Employed Caregiver	0.86	0.35	2,339
Hrs Work Caregiver	7.30	1.98	2,004
Social Desirability	6.14	2.00	2,341
Patience	7.69	1.92	2,321
Risk	6.22	2.47	2,332
Girl	0.48	0.50	2,341
Age in Months	37.68	20.03	2,341
Cohabitation w/Parents	0.92	0.28	2,185
Hrs with Parents	17.69	3.17	2,326
Hrs in Kindergarten	4.44	2.65	2,326
Hrs with Unpaid Caregiver	1.27	2.20	2,326
Hrs with Paid Caregiver	0.60	1.67	2,326
Number of Children Books	2.67	0.52	2,340
Screen Time	2.02	1.65	2,341

Notes: Column 2 shows the mean, column 3 shows the standard deviation and column 4 shows the number of observations. Belief on Child Development is a standardized index on the belief of malleability of child development through the caregivers' behavior following Bhalotra et al. (2020). Social Desirability is a reduced form of the Marlowe-Crowne scale with 9 items following Manganelli et al. (2000). Patience is a 0 to 10 index where higher values imply higher willingness to wait, and risk is a 0 to 10 index where higher values imply higher willingness to take risks, following Falk et al. (2018). Hrs with Parents, Hrs in Kindergarten, Hrs in Unpaid Caregiver and Hrs with Paid Caregiver reflect the daily hours arrengements to take care of the child including hours of sleep. Number of Children Books is a three category question on the number of children books available at home: 0, 1 to 9, 10 or more. Screen Time is a global time estimate of daily screen time.

C Informed Consent

Who are we?
We are a group of researchers from the University of the Republic and the European University Institute. Our aim is to study early childhood development in Uruguay. We want to know the current situation on the subject, so there are no right or wrong answers.

How does the survey work?
The survey takes on average about 10 minutes. By completing this survey you are contributing to the general knowledge about early childhood in our country. It is very important for this research that you answer honestly and read the questions carefully before answering. Whenever you do not know an answer, please select the one closest to your situation.

Your participation in this study is purely voluntary and you may withdraw at any time. If you decide to participate in the survey, it is best to do it all the way through to the end, but if this is not possible you can return to it later using the same link.
If you have any questions about this study, please contact the principal investigators, Karina Colombo (karina.colombo@eui.eu) and Elisa Failache (elisa.failache@fcea.edu.uy).

How will my data be managed?
Your personal data will be managed in accordance with the data protection policy in force in Uruguay and at the European University Institute. No personally identifiable information will be disclosed at any time, only anonymous data will be shared. This research project was approved by the Ethics Committee of the European University Institute.
If you have any questions about your rights as a participant, please contact ethics@eui.eu or data_protection_office@eui.eu.

By completing this survey to the end:

- You participate in four draws for $4.000 shopping vouchers in Ta-Ta and DEVOTO supermarkets.
- You can download free personalized parenting recommendations based on materials made by specialists.
- You can also be invited to take part in additional follow-up surveys which will give you the chance to win even more prizes.

Would you like to participate?

- Yes, I would like to participate in this study. I confirm that I have read and understood the information provided above, that I am 18 years of age or older, and that I agree to the processing of my personal data according to the terms referred to in the privacy statement.
- No, I would not like to participate.

D Video Script

Duration: 1 minute 35 seconds. *Sentences in brackets only appear written on the screen.*

1) **Early years are key for growth and development. Good nutrition at this stage has lifelong effects.**

2) **What are the recommendations for early childhood?**
[Early Childhood Feeding]

- Offer exclusively breast milk for the first 6 months

[Exclusively breast milk for the first 6 months of life]

- Then, supplement it by offering at each meal: an iron-rich food, an energy-rich food, fruits, and vegetables.

  [Then supplement by offering at each meal: an iron-rich food, an energy-rich food, fruit and vegetables]

3) Which foods should be avoided?

- Avoid ultra-processed foods such as juices, desserts, and nuggets as much as possible.
- Do not add salt or added sugar until one year of age.
- Delay the introduction of cold cuts and sausages.
- Do not offer squeezed juices before the age of one year.
- Avoid mate, coffee, and tea.

4) At the beginning, thinking about healthy eating can be challenging. Here are some day-to-day [Day-to-day TIPS]

- Homemade meals are the best option. Any simple, healthy dish is preferable to packaged food.
- Offer meat, chicken, or pork regularly, and fish at least once a week.
- Offer seasonal fruits and vegetables, they have better taste and nutritional value.
- Use healthy fats such as uncooked oil. It's good for them and adds flavour to food.
- When they are thirsty, the best always is to offer water.
- When you don't know what to combine, try varying colours and textures.

5) And most importantly! Enjoy cooking and eating together as a family!

E Control Variables

Table E.2: Balance in Household and Caregiver Attributes - Complete Sample

Variable	Control Mean [SE]	Treatment Mean [SE]	Difference (p-value)
Living in Mdeo	0.011	-0.011	-0.022
	[0.997]	[1.003]	(0.598)
Number of People	0.010	-0.010	-0.020
	[1.018]	[0.982]	(0.633)
Internet at Home	-0.020	0.020	0.040
	[1.024]	[0.975]	(0.327)
TV with Cable or Internet	-0.013	0.013	0.026
	[1.001]	[1.000]	(0.538)
Number of Computers	0.017	-0.017	-0.032
	[0.975]	[1.025]	(0.433)
Number of Tablets	-0.040	0.040	0.080*
	[0.970]	[1.028]	(0.055)
Number of Smartphones	-0.003	0.003	0.004
	[0.985]	[1.015]	(0.917)
Female	0.025	-0.025	-0.055
	[0.970]	[1.029]	(0.170)
Age	-0.046	0.046	0.096**
	[1.009]	[0.989]	(0.018)
Years of Education	-0.028	0.029	0.063
	[1.009]	[0.991]	(0.108)
Number of Offsprings (0-5)	0.005	-0.005	-0.011
	[0.999]	[1.001]	(0.796)
Living with Couple	0.014	-0.014	-0.027
	[0.987]	[1.013]	(0.519)
Employed Caregiver	-0.013	0.013	0.028
	[1.013]	[0.987]	(0.491)
Hrs Work Caregiver	-0.045	0.045	0.095**
	[0.977]	[1.021]	(0.032)
Social Desirability	-0.005	0.005	0.010
	[1.017]	[0.983]	(0.801)
Patience	0.001	-0.001	-0.002
	[0.985]	[1.015]	(0.963)
Risk	-0.028	0.028	0.055
	[0.995]	[1.004]	(0.182)
Belief on Child Development	0.009	-0.009	-0.015
	[0.991]	[1.009]	(0.707)
Beliefs Screens	-0.009	0.009	0.017
	[0.995]	[1.005]	(0.681)
Observations	1,173	1,168	2,341

Notes: Columns 2 and 3 report the means of baseline variables for the treatment and control group, with robust standard errors in brackets. Column 3 shows the estimated difference in means obtained from regressing the variable of interest on the treatment indicator controlling for sample origin. P-values are reported in parentheses with significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Social Desirability is a reduced form of the Marlowe-Crowne scale with 9 items. Patience is a 0 to 10 index where higher values imply higher willingness to wait. Risk is a 0 to 10 index where higher values imply higher willingness to take risks. Belief on Child Development is a standardized index on the belief of malleability of child development through the caregivers' behavior. Beliefs Screens is an index of parental beliefs on screens available including the level of agreement with the following statements: "playing with screens they can learn as much as with adults", and, "the sooner they learn to use screens, the better".

Table E.3: Balance in Child and parental practices - Complete Sample

Variable	Control Mean [SE]	Treatment Mean [SE]	Difference (p-value)
Girl	0.484	0.484	-0.001
	[0.500]	[0.500]	(0.974)
Age in Months	36.786	38.580	1.854**
	[19.952]	[20.068]	(0.023)
Cohabitation w/Parents	0.923	0.908	-0.015
	[0.266]	[0.289]	(0.210)
Hrs with Parents	17.729	17.644	-0.093
	[3.203]	[3.131]	(0.473)
Hrs in Kindergarten	4.390	4.499	0.115
	[2.670]	[2.623]	(0.292)
Hrs with Unpaid Caregiver	1.290	1.242	-0.048
	[2.219]	[2.179]	(0.598)
Hrs with Paid Caregiver	0.591	0.615	0.027
	[1.632]	[1.704]	(0.700)
Number of Children Books	-0.027	0.027	0.058
	[1.018]	[0.981]	(0.160)
Adult Support for Learning	-0.000	-0.000	0.001
	[0.990]	[1.010]	(0.985)
Screen Time	0.027	-0.028	-0.055
	[1.040]	[0.958]	(0.186)
Quality of Screen Time	-0.058	0.057	0.114**
	[1.006]	[0.991]	(0.012)
Observations	1,173	1,168	2,341

Notes: Columns 2 and 3 report the means of baseline variables for the treatment and control group, with robust standard errors in brackets. Column 3 shows the estimated difference in means obtained from regressing the variable of interest on the treatment indicator controlling for sample origin. P-values are reported in parentheses with significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Hrs with Parents, Hrs in Kindergarten, Hrs in Unpaid Caregiver and Hrs with Paid Caregiver reflect the daily hours arrengements to take care of the child including hours of sleep. Number of Children Books is a standardized variable of a three category question on the number of children books available at home. Adult Support for Learning is a standardized index on the frequency in which an adult engages with the child in activities to support learning and promote school readiness. Screen Time is a standardized variable the daily average screen time. Quality of screen time is a standardized index that measures the quality of screen exposure considering: co-viewing, parental controls, content quality, moments of exposure, rules for exposure and background TV.

Table E.4: Control Variables

Category	Name	Description
Fixed Effect	Sample Origin	Categorical variable indicating whether the observation was obtained through UDELAR sample frame, or through social media or the recruiting company historic database.
Caregiver	Age	Continuous variable for age in years.
Caregiver	Years of Education	Continuous variable for years of education starting from primary school.
Caregiver	Hrs Work Caregiver	Continuous variable for daily hours of paid work. When not employed, hours are set to zero.
Caregiver	Number of Offsprings	Continuous variable on number of sons or daughters younger than six years of age living with the caregiver.
Caregiver	Belief on Child Development	Standardized variable for the belief regrading malleability of children's skills to parental investment following Bhalotra et al. (2020) . Constructed using the level of agreement on a 5-point Likert scale with the following statement: "Each child learns at his/her own pace, there's nothing I can do to change that."
Caregiver	Beliefs Screens	Index summarizing beliefs on screens. Each belief is measured through a 5-point Likert scales regarding the level of agreement with the following phrases: "playing with screens they can learn as much as with adults" and "the sooner they learn to use screens, the better".
Child	Age in months	Categorical variable indicating the year when the survey interview took place.
Child	Hrs in Kindergarten	Categorical variable indicating daily hours of preschool. When not attending preschool, hours are set to zero.
Child	Adult Support for Learning	Index on adult support for learning and school readiness following Cappa (2014). Constructed using 5-point Likert scale questions on the frequency of engaging with the child in the following activities: reading books to the child, telling stories to the child, singing songs to the child, taking the child outside the home, playing with the child,and, naming, counting or drawing things with the child.
Child	Quality of screen time	Index of screen exposure quality including six dimensions: co-viewing, content quality, parental controls, moments of exposure, rules for screen exposure, and background TV exposure.
Household	Number of Tablets	Continuous variable indicating the number of tablets in the household.

F Additional results

Table F.5: Social Desirability Bias in Feeding Practices - Without Controls

	Ultra-processed Foods	Fish
Treatment	-0.159***	-0.022
	(0.043)	(0.043)
P-Value	0.00	0.60
Control Mean	0.08	0.01
Observations	2176	2156

Notes: Reported estimates are obtained from an OLS regression on a treatment indicator without additional controls. Treatment takes value 1 when the video on best feeding practices was shown before the survey module on feeding habits. The dependent variables *Ultra-processed Foods* and *Fish* are standardized variables with increasing values showing higher consumption of ultra-processed foods or fish, respectively. Robust standard errors are reported in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F.6: Social Desirability Bias in Feeding Practices by Sample Origin - $\geq$ 10 Years of Schooling

	Ultra-processed Foods	Fish
Treatment - Social Network	-0.164***	-0.046
	(0.000)	(0.411)
Treatment - UDELAR	-0.126**	0.064
	(0.020)	(0.350)
P-Value: Social Network=UDELAR	0.578	0.212
Control Mean - Social Network	0.029	0.002
Control Mean - UDELAR	0.176	0.025
Observations	2022	2001

Notes: Estimates obtained through OLS regressions including a binary indicator of the variable considered for the heterogeneous effect and an interaction between this variable and the treatment indicator, controlling for pre-treatment caregiver, child and household characteristics. Control variables are presented in Table E.4 in the Appendix. Sample origin is excluded as a control variable. Treatment takes value 1 when the video on best feeding practices was shown before the survey module on feeding habits. The dependent variables *Ultra-processed Foods* and *Fish* are standardized variables with increasing values showing higher consumption of ultra-processed foods or fish, respectively. In each panel the first four rows report the treatment effects for each group, with stars indicating their significance level and p-values in parentheses. The fifth row reports the p-value for the test of equal effects (interaction term). Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F.7: Social Desirability Bias in Feeding Practices by Risk Preferences

	Ultra-processed Foods	Fish
Treatment - Risk below median	-0.106**	-0.012
	(0.019)	(0.846)
Treatment - Risk above median	-0.218***	0.037
	(0.000)	(0.521)
P-Value: Risk below median=Risk above median	0.076	0.557
Control Mean - Risk below median	0.071	0.002
Control Mean - Risk above median	0.090	0.015
Observations	2169	2150

Notes: Estimates obtained through OLS regressions including a binary indicator of the variable considered for the heterogeneous effect and an interaction between this variable and the treatment indicator, controlling for pre-treatment caregiver, child and household characteristics. Control variables are presented in Table E.4 in the Appendix. Treatment takes value 1 when the video on best feeding practices was shown before the survey module on feeding habits. The dependent variables *Ultra-processed Foods* and *Fish* are standardized variables with increasing values showing higher consumption of ultra-processed foods or fish, respectively. In each panel the first four rows report the treatment effects for each group, with stars indicating their significance level and p-values in parentheses. The fifth row reports the p-value for the test of equal effects (interaction term). Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F.8: Social Desirability Bias in Feeding Practices by Patience

	Ultra-processed Foods	Fish
Treatment - Patience below median	-0.195***	-0.034
	(0.000)	(0.596)
Treatment - Patience above median	-0.131***	0.050
	(0.002)	(0.370)
P-Value: Patience below median=Patience above median	0.316	0.321
Control Mean - Patience below median	0.122	0.029
Control Mean - Patience above median	0.046	-0.008
Observations	2158	2138

Notes: Estimates obtained through OLS regressions including a binary indicator of the variable considered for the heterogeneous effect and an interaction between this variable and the treatment indicator, controlling for pre-treatment caregiver, child and household characteristics. Control variables are presented in Table E.4 in the Appendix. Treatment takes value 1 when the video on best feeding practices was shown before the survey module on feeding habits. The dependent variables *Ultra-processed Foods* and *Fish* are standardized variables with increasing values showing higher consumption of ultra-processed foods or fish, respectively. In each panel the first four rows report the treatment effects for each group, with stars indicating their significance level and p-values in parentheses. The fifth row reports the p-value for the test of equal effects (interaction term). Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F.9: Social Desirability Bias in Feeding Practices by the 9-items Marlowe-Crowne Scale

	Ultra-processed Foods	Fish
Treatment - $\leq$ 6 items	-0.107***	-0.013
	(0.004)	(0.788)
Treatment - $>$ 6 items	-0.297***	0.076
	(0.000)	(0.346)
P-Value: $\leq$ 6 items=$>$ 6 items	0.008	0.343
Control Mean - $\leq$ 6 items	0.061	0.018
Control Mean - $>$ 6 items	0.126	-0.009
Observations	2176	2156

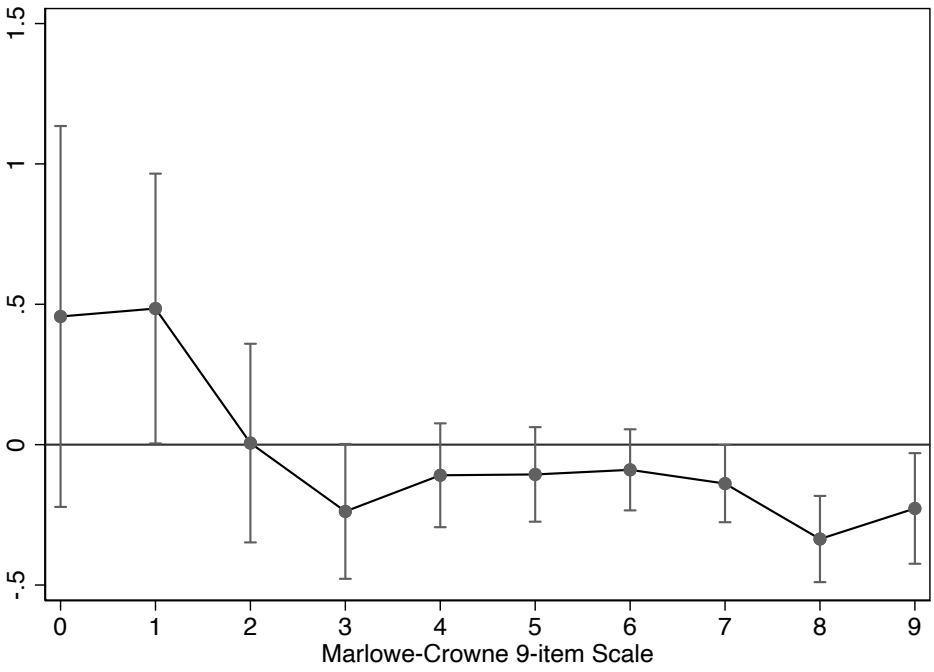
Notes: Estimates obtained through OLS regressions including a binary indicator of the variable considered for the heterogeneous effect and an interaction between this variable and the treatment indicator, controlling for pre-treatment caregiver, child and household characteristics. Control variables are presented in Table E.4 in the Appendix. Treatment takes value 1 when the video on best feeding practices was shown before the survey module on feeding habits. The dependent variables *Ultra-processed Foods* and *Fish* are standardized variables with increasing values showing higher consumption of ultra-processed foods or fish, respectively. In each panel the first four rows report the treatment effects for each group, with stars indicating their significance level and p-values in parentheses. The fifth row reports the p-value for the test of equal effects (interaction term). Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F.10: Social Desirability Bias in Feeding Practices by the 5-item Marlowe-Crowne Scale

	Ultra-processed Foods	Fish
Treatment - Below median	-0.095**	0.017
	(0.040)	(0.766)
Treatment - Above median	-0.220***	0.007
	(0.000)	(0.905)
P-Value: Below median=Above median	0.049	0.902
Control Mean - Below median	0.087	0.016
Control Mean - Above median	0.073	0.005
Observations	2176	2156

Notes: Estimates obtained through OLS regressions including a binary indicator of the variable considered for the heterogeneous effect and an interaction between this variable and the treatment indicator, controlling for pre-treatment caregiver, child and household characteristics. Control variables are presented in Table E.4 in the Appendix. Treatment takes value 1 when the video on best feeding practices was shown before the survey module on feeding habits. The dependent variables *Ultra-processed Foods* and *Fish* are standardized variables with increasing values showing higher consumption of ultra-processed foods or fish, respectively. In each panel the first four rows report the treatment effects for each group, with stars indicating their significance level and p-values in parentheses. The fifth row reports the p-value for the test of equal effects (interaction term). Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Figure F.1: Treatment Effects by the 9-items Marlowe-Crowne Scale as Discrete



G Marlowe-Crowne 9-items and 5-items Scales

Marlowe-Crowne 9-items Scale - Manganelli et al. (2000)

Read each one of this phrases thinking about your way of acting and decide if it's true or false for you.

- No matter who I'm talking to, I'm always a good listener.
- There have been occasions when I have taken advantage of someone.
- I'm always willing to admit it when I make a mistake.
- I sometimes try to get even rather than forgive and forget.
- I am always courteous, even to people who are disagreeable.
- I have never been irked when people expressed ideas very different from my own.
- There have been times when I was quite jealous of the good fortune of other.
- I am sometimes irritated by people who ask favors of me.
- I have never deliberately said something that hurt someone's feelings.

Marlowe-Crowne 9-items Scale - Hays et al. (1989)

Read each one of this phrases thinking about your way of acting and decide if it's true or false for you.

- I sometimes feel resentful when I don't get my way.
- No matter who I'm talking to, I'm always a good listener.
- There have been occasions when I have taken advantage of someone.
- I sometimes try to get even rather than forgive and forget.
- I am always courteous, even to people who are disagreeable.