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targeted subject influence positional preferences?

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When does reference values or targeted subject influence positional preferences?

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Are we more positional when we can choose a whole loaf of bread, as we are when we are forced to choose between crumbs? Does it matter if we choose for ourselves or for a hypothetical relative?

In this study, we use an experimental survey approach to if the degree of positionality is sensitive to variations in *reference levels* and *targeted subject*. Based on previous research in economics and psychology, our hypotheses are that 1) people are more positional when they choose between alternatives with relatively high consumption levels, and 2) people are more positional when they choose for a hypothetical grandchild, than for themselves. We measure positional preferences in five domains – Income, housing, vacation and SAT-score, and test our hypotheses on a large representative sample from the US (N=1300). As social demographic indicators, we include information about gender, birth year, children or grandchildren, individual income, vacation days, size of home and reported SAT-score. Our results suggest that the instruments commonly used to elicit positional preferences are relatively insensitive to variations in consumption levels and targeted subject, with a few important exceptions. First, we find that positional preferences for income and SAT scores depend on the reference level used in the hypothetical choice scenarios. Second, our results suggest that people are significantly more likely to choose the positional option for housing when they choose for a hypothetical grandchild than when they choose for themselves.

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## Section 1 - Introduction

Values matter! The level of our wage enables our consumption, and the score on our exam opens up possibilities for education. According to classical economic theory, rational agents maximize their individual utility. However, an emerging aspect in behavioral economics confirms that our personal wellbeing is affected by how much we have in comparison to referent others, and not only by what we have in isolation (Duesenberry, 1949; Easterlin, 1995; Veblen, 1899). We know that this comparison will have a negative effect on how good we feel about ourselves, because we want to signal success through our social standing (Clark & Oswald, 1996; Luttmer, 2005).

Previous research suggests that a large share of the population holds positional preferences, and we have important insights on how individual decisions vary with domain. In this setting, the term domain defines for what the individual are deciding on, such as income, vacation days, intelligence etc. There are various findings on how preferences compare for these domains (e.g. Alpizar, Carlsson, & Johansson-Stenman, 2005; Bogaerts & Pandelaere, 2013; Carlsson, Gupta, & Johansson-Stenman, 2008; Celse, 2012; Grolleau, Mzoughi, & Saïd, 2012; Hillesheim & Mechtel, 2012, 2013). We know that positional preferences reduce individual wellbeing (Clark & Oswald, 1996; Luttmer, 2005), and the degree of positionality appears to vary with consumption domain (Carlsson, Johansson-Stenman, & Martinsson, 2007). A common finding in the literature is that people are more positional for visual status goods (e.g., cars and houses), and personal characteristics (e.g., intelligence and attractiveness) than they are for leisure and public goods (Alpizar et al., 2005; Carlsson et al., 2007; Hillesheim & Mechtel, 2013)

The existing body of research has shed light on a psychological mechanism that creates incentives to engage in conspicuous consumption and therefore create market failures. However, although a number of studies show that the degree of positionality is sensitive to the *type* of consumption (i.e., domain); no previous study has investigated if positional concerns vary with the *level* of consumption. Similarly, although some researchers (Alpizar et al., 2005; Carlsson et al., 2007) argue that the targeted subject (i.e., for whom we choose) can affect positional choices, no one has to date tested if this is true. This study tries to fill this gap.

A common approach to elicit positional preferences is to ask subjects to choose between two hypothetical states of the world (e.g. Bogaerts & Pandelaere, 2013; Grolleau et al., 2012; Solnick & Hemenway, 1998). In state A, the subject has a high level of consumption in absolute terms but a low level in relative terms because everybody else has an even higher level of consumption. In state R the subject has a lower level of consumption compared to state A, but they are relatively better off than the reference. By definition, subjects choosing state R are positional, because they are willing to give up consumption to have more than people have in the reference group.

Some researchers also include a third state, in which the subject has the same amount as in state R and equally much as the reference group, to rule out egalitarian preferences (Celse, 2012). This approach makes it possible to calculate the marginal degree of positionality using only the values in A and B. It is common to use either a ratio comparison utility function,  $u_i = (x_i, x_i/\bar{x})$  or an additive comparison utility function,  $u_i = (x_i, x_i - \bar{x})$ . In both expressions, the

individual level of consumption is  $x_i$  and  $\bar{x}$  is the average level of consumption in society (Carlsson et al., 2007).

If we define an individual's utility ( $u_i$ ) as a function of both her absolute level of consumption ( $x_i$ ) and her relative level of consumption ( $\Delta_i$ ), we can define the marginal degree of positionality ( $\gamma$ ) as in the fraction below.

$$\gamma = \frac{\frac{\partial u_i}{\partial \Delta_i} \frac{\partial \Delta_i}{\partial x_i}}{\frac{\partial u_i}{\partial x_i} + \frac{\partial u_i}{\partial \Delta_i} \frac{\partial \Delta_i}{\partial x_i}} \quad (1)$$

A common approach to elicit positional preferences is to ask subjects to choose between two hypothetical states of the world (e.g. Bogaerts & Pandelaere, 2013; Grolleau et al., 2012; Solnick & Hemenway, 1998). In state A, the subject has a high level of consumption in absolute terms but a low level in relative terms because everybody else has an even higher level of consumption. In state R the subject has a lower level of consumption compared to state A, but they are relatively better off than the reference. By definition, subjects choosing state R are positional, because they are willing to give up consumption to have more than people have in the reference group. Some researchers also include a third state, in which the subject has the same amount as in state R and equally much as the reference group, to rule out egalitarian preferences (Celse, 2012). Below is an example:

- State A: You have 100 000 in yearly wage, others on average have 200 000
- State R: You have 50 000 in yearly wage, others on average have 25 000
- State E: You have 50 000 in yearly wage, others on average have 50 000

If we assume that the utility function is additively separable and linear (e.g.,  $u_i(x_i, \Delta_i) = x_i + \gamma \cdot (x_i - \bar{x})$ ), this approach makes it possible to calculate the marginal degree of positionality using only the values in A and R, as represented by equation (2):

$$\gamma = \frac{Subject_{absolute(A)} - Subject_{positional(B)}}{Reference_{absolute(A)} - Reference_{positional(B)}} \quad (2)$$

The numerator is the difference between alternatives A and B for the subject, and the denominator the difference between alternatives A and B for the reference. This is the same formula used by Carlsson et al. (2008) and Alpizar et al. (2005) For all positionality questions, and all level treatments, the  $\gamma$  in is 0.33.

As can be seen in the example we asks the subject to choose for him or herself and to choose the alternative that they prefer the most. However, some researchers argue that it is better to decide for a child (Celse, 2012) or a hypothetical relative (Alpizar et al., 2005; Carlsson et al., 2008; Johansson-Stenman, Carlsson, & Daruvala, 2002), because it may be difficult for respondents to disregard their current circumstances. There are several reasons for why it may be more adequate to choose for a child or a hypothetical future relative. One reason put forward in the literature is that when we choose for ourselves, we compare the consumption levels in the scenarios to our own current and past consumption level, and that this may bias the results. If we instead choose for a hypothetical relative, we view the situation from a

distance and this enables us to liberate ourselves from our current circumstances (Alpizar et al., 2005; Carlsson et al., 2008).

Another potential reason for why choices may not represent true preferences when participants choose for themselves is that the main emotion related to positionality is envy (Hirsch, 1977). Since envy has a negative social value, we may refrain from choosing the positional alternative.

The main emotion related to positionality is envy (Elster, 1998; Festinger, 1954), because when we place ourselves in the same setting as comparable others, we perceive them to be better off. There are no positive social values related with envy, therefore we may refrain from revealing that it is what we feel because we want to give the impression that we are not envious of others. When we choose for a hypothetical relative, we can display our positional preferences without fear of appearing envious. When we are not bound by our own reference points (our wage, vacation days), the positional alternatives becomes more salient if the subject in decision-making is a future relative. In other words, we need to ensure that our measurement instruments are robust. In order to evaluate the robustness of measurement instruments for positional preferences, we need to experimentally test if the share of positional answers varies with the reference level and targeted subject.

To the best of our knowledge, only a few studies include more than one level of consumption in the choice scenarios (Celse, 2012; Grolleau et al., 2012; Solnick & Hemenway, 2005). However, although the results suggest that the share of positional answers increase when the reference level of consumption is higher, neither of these studies formally evaluate the effect. Furthermore, these studies only cover income (Celse, 2012; Solnick & Hemenway, 2005) and vacation (Celse, 2012; Grolleau et al., 2012), all studies use a within-subject design and none of the studies randomize the order of presentation. Regarding the targeted, we have not come across any studies analyzing how this affects the results. With our study, we want to explore if these results are robust to a new design with a new sample, by measuring how level variation and targeted subject affects positional preferences for income as well as for size of home, SAT-test scores and paid vacation days.

When you have more money, you have more money to spare. According to Maslow's hierarchy of needs we seek recreation after the fundamental needs of security (Maslow, 1943). With this study, we predict that the share of positional preferences are larger for the medium and high treatment, than for the low treatment. From economic theory, our marginal utility from one additional unit of consumption diminish when our absolute level of consumption increase. It less costly to choose the positional alternative at higher levels because it hurts less to lose a little bit when you have a lot in the first place. In this survey, there are four unique domains, with five questions in total. The values in the medium treatment is two times those in the low treatment, and the values in the high treatment is always two times the values in the medium treatment.

It is important to extend the insight on reference levels and subject, and their influence on positional preferences because we have to ensure robustness of our instrument. If we are to trust the results from our studies, we need to trust the instruments we use. This study is an important contribution to future studies in two distinct ways. First, we provide evidence of

how level variation affects the share of positional answers, and second, how these answers vary with the subject in decision-making. This study provides evidence to the robustness of the favored tools in research on positional preferences.

We structure the article as follows: Section (2) presents the data, sample and treatments, section (3) the results from survey and analysis, and section (4) concludes by discussing future implications of the findings.

In accordance with good science ethics, and to facilitate replications, the study is preregistered in Open Science Framework. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors

## **Section 2 – Materials and Method**

### **2.1 Hypotheses**

This study tests if positional concerns vary with the targeted subject and with different reference levels with two distinct hypotheses.

*H1: The share of positional answers increases when the levels increases.*

*H2: The share of positional answers increases when individuals make decisions for a distant relative rather than for themselves.*

### **2.2 Participants**

We sent out the survey to 1 300 US individuals, using a representative sample recruited through Prolific Academics. 1119 (86%) provided complete answers<sup>1</sup>. From the recruited sample of 1300 individuals, 1119 (86%) provided complete answers.

In the complete sample, 50% identifies as male and 50% as female. The mean monthly income before taxes is between USD 3001 and USD 4000 per month, 63% holds a university degree and the average participant is born in 1975. From the social demographics, 57% of the sample have children, and 19% have grandchildren. Only 9% of the sample are students. The average size of home is about 1 400 square feet, the average SAT-score is between 701 and 800, and the average individual has 10 days of paid vacation each year.

### **2.3 Design and method**

The survey had consisted of two sections. In the first section, the participants evaluated a set of hypothetical choice scenarios aimed to elicit positional preferences. All choice scenarios had three states of the world (Absolute, Relative, and Egalitarian). Each participant evaluated one choice scenario per domain. To avoid ordering effects, we randomized the order of presentation.

In the second section, the participants answered questions on background characteristics, including income level, house size, vacation days, SAT scores, number of children and grandchildren. All choice scenarios included three states of the world. In A) the targeted subject has most in absolute value, but relatively less than others do. This is optimal if she seeks to maximize her own consumption. In state R) the targeted subject has less than in A

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<sup>1</sup> it was possible to answer “I do not want to answer” on all questions

but relatively more than others do, and is optimal if she cares only about her relative standing. Finally, in E) the targeted subject has equally much as in B and equally much as everyone else. This is optimal if she is inequality averse (Celse, 2012). By definition, the individual is positional if she chooses the second state and non-positional if she chooses any of the other.

#### 2.4.1 Level treatment

To test if the share of positional answers is sensitive to the level of consumption, we used three different levels in each domain: low, medium, and high. We chose the low level to represent a level just above subsistence level. More specifically, the low level for income is slightly higher than the minimum wage in the US in 2021 (\$7.25<sup>1</sup> an hour). With forty hour workweek, and four weeks per month, the monthly wage is approximately 1 160. For housing, we asked about both the size of house and size of apartment, with the low level for the latter at 500 square feet. In the US, the average size of new apartments in 2018 was 950 square feet, and we consider anything below 300 square feet as unlivable<sup>2</sup>. The main difference between the two questions is the framing; in the question on house both the subject and their family lives the house, but in the apartment scenario, the subject lives alone. Looking at the share of adults living alone, there is a higher share of single person households in urban areas compared to rural areas<sup>3</sup>. This is why the values on house size exceeds that of apartments and is three times that of the apartment in the same alternatives.

Regarding SAT-scores, we use 325. The maximum score is 1600 and the average score in 2020 was 1051<sup>4</sup>. Due to the construction of the test, a score lower than 200 is almost impossible. If you have a score above 1200, you are in the top percentile and you are likely to get access to the best schools in the field you desire. Finally, for paid vacation days we use 10 days as the minimum value. In the US, there are no federal law stating that employees are entitled to paid vacation days. Moreover, 25% of workers does not receive any paid vacation at all<sup>5</sup>. If you work in the private sector, the average amount of paid vacation or holiday is 10 days. To test if the share of positional answers is sensitive to the level of consumption, we used three different levels in each domain: low, medium, and high. The medium and high levels represent two times and four times the value in the low level, respectively. We calibrated the values in the different alternatives such that the marginal degree of positionality was equal to 0.33 in all scenarios. Below, we show an example of the level treatment in the income domain, when subjects answer for themselves. Alternative B represents the positional alternative (state R) and alternative C represent egalitarian preferences (state E).

Prices and purchasing power are the same in all alternatives. The only difference is the monthly earnings. In which of these states, do you think you would feel most satisfied?

<u>Low level</u>	<u>Medium level</u>	<u>High level</u>
You earn <b>USD 2 000</b> before taxes every month. In society, people earn on	You earn <b>USD 4 000</b> before taxes every month. In society, people earn on	You earn <b>USD 8 000</b> before taxes every month. In society, people earn on

<sup>1</sup> <https://www.statista.com/statistics/238997/minimum-wage-by-us-state/> on May 4<sup>th</sup> 2021

<sup>2</sup> <https://www.apartmenttherapy.com/what-is-considered-a-small-apartment-243701> on November 19<sup>th</sup> 2020

<sup>3</sup> <https://www.census.gov/library/stories/2019/10/older-population-in-rural-america.html> on March 2<sup>nd</sup> 2021

<sup>4</sup> <https://insights.collegeconfidential.com/average-sat-score> on March 2<sup>nd</sup> 2021

<sup>5</sup> <https://www.cbsnews.com/news/one-in-four-workers-in-us-dont-get-any-paid-vacation-time-or-holidays/> on November 19<sup>th</sup> 2020



average **USD 2 300** each month before taxes  
 You earn **USD 1 700** before taxes every month. In society, people earn on average **USD 1 400** each month before taxes.  
 You earn **USD 1 700** before taxes every month. In society, people earn on average **USD 1 700** each month before taxes.

average **USD 4 600** each month before taxes  
 You earn **USD 3 400** before taxes every month. In society, people earn on average **USD 2 800** each month before taxes.  
 You earn **USD 3 400** before taxes every month. In society, people earn on average **USD 3 400** each month before taxes

average **USD 9 200** each month before taxes  
 You earn **USD 6 800** before taxes every month. In society, people earn on average **USD 5 6 00** each month before taxes.  
 You earn **USD 6 800** before taxes every month. In society, people earn on average **USD 6 800** each month before taxes

#### 2.4.2 Subject treatment

To test if the share of positional answers is sensitive to for whom the respondent answers for, we used two types of targeted subject: the self, and a hypothetical grandchild. We randomized this treatment across participants, such that a participant only answered questions for themselves as the targeted subject *or* for a hypothetical grandchild, in all domains. The between-subject design ensures that participants fail to notice the change in targeted subject. When, in the first domain they evaluate for themselves, they self-prime into by default evaluate the remaining domains for themselves. We illustrate variation in targeted subject with the example below (low values)

A stable home is essential to ensure quality of life. Regardless if you live alone or with your family, if it on permanent basis or only temporary. In which of these states, do you think you would feel most satisfied?

##### Self

You and your family have a house that is **1 500 square feet** large. In society, the average size of people’s houses is **1 650 square feet**.  
 You and your family have a house that is **1 350 square feet** large. In society, the average size of people’s houses is **1 200 square feet**.  
 You and your family have a house that is **1 350 square feet** large. In society, the average size of people’s houses is **1 350 square feet**.

##### Grandchild

Your grandchild and family have a house that is **1 500 square feet** large. In society, the average size of people’s houses is **1 650 square feet**.  
 Your grandchild and family and family have a house that is **1 350 square feet** large. In society, the average size of people’s houses is **1 200 square feet**.  
 Your grandchild and family have a house that is **1 350 square feet** large. In society, the average size of people’s houses is **1 350 square feet**.

#### 2.4.2 Experimental design

We randomize both treatments for the sample, with half deciding for themselves and the second half deciding for a grandchild. Since there was no change in targeted subject throughout, the below table illustrates all possible combinations. Only by coincidence did they receive the same order of domains as presented in table (1). In addition, only by coincidence did they read the same level treatment for all domains.

**Table 1:** treatments

	Deciding for self			Deciding for grandchild		
SAT-score	Low	Medium	High	Low	Medium	High
House size	Low	Medium	High	Low	Medium	High
Apartment size	Low	Medium	High	Low	Medium	High
Vacation days	Low	Medium	High	Low	Medium	High
Monthly income	Low	Medium	High	Low	Medium	High

### Section 3 – Results and analysis

#### 3.1 Descriptive statistics

Table (2) displays the distribution of answers, pooled across both treatments. As can be seen in the table, the share of positional answers ranges from about 22% for apartment to 55% for SAT score. 43% chose the positional alternative for income, while 25% of participants are positional about vacation and house. The share of egalitarian answers ranges from 19% for SAT score to 38% for housing.

**Table 2:** Response categories pooled across treatments

	Absolute	Positional	Egalitarian	Sum
SAT	26,72 %	54,51 %	18,77 %	100,00 %
House	37,35 %	24,66 %	37,98 %	100,00 %
Apartment	47,10 %	21,72 %	31,19 %	100,00 %
Vacation	41,91 %	24,58 %	33,51 %	100,00 %
Income	32,44 %	42,54 %	25,02 %	100,00 %

I present the distribution of positional answers across treatments in table (3). The first column in each panel represent the total number of participants exposed to the treatment, and the second column show the share of participants who chose the positional alternative. The descriptive statistics in table (3) does not reveal a large variation in answers across treatments. This is especially the case for the level treatment, although we observe a slight increase in positional answers from low to either medium or high in domains size of house and vacation days. For the question on income, the share of positional answers increased from low to medium and then again from medium to high, both for the self and the grandchild treatment. However, in most cases the share of positional answers is slightly higher when the targeted subject is a grandchild as compared to self. SAT score constitute an exception to this, with the same trend for both subject treatments, with a decreasing share of positional answers between level treatments.

**Table 3:** Share of positional answers sorted on both levels and subject treatment<sup>6</sup>

SUBJECT TREATMENT  
ALL                      SELF                      GRANDCHILD

DOMAIN & LEVEL		TREATMENT		N	% PP	N	% PP	N	% PP
SAT-test	All	1119	54,51 %	570	55,09 %	549	53,92 %		
	Low	366	58,47 %	183	59,02 %	183	57,92 %		
	Medium	373	52,55 %	200	55,00 %	173	49,71 %		
	High	380	52,63 %	187	51,34 %	193	53,89 %		
House	All	1119	24,66 %	570	22,11 %	549	27,32 %		
	Low	351	23,93 %	181	22,10 %	170	25,88 %		
	Medium	389	26,22 %	197	23,86 %	192	28,65 %		
	High	379	23,75 %	192	20,31 %	187	27,27 %		
Apartment	All	1119	21,72 %	570	19,82 %	549	23,68 %		
	Low	365	21,64 %	188	22,87 %	177	20,34 %		
	Medium	391	19,95 %	199	18,09 %	192	21,88 %		
	High	363	23,69 %	183	18,58 %	180	28,89 %		
Vacation	All	1119	24,58 %	570	22,63 %	549	26,59 %		
	Low	391	22,51 %	192	16,67 %	199	28,14 %		
	Medium	369	26,29 %	197	25,89 %	172	26,74 %		
	High	359	25,07 %	181	25,41 %	178	24,72 %		
Income	All	1119	42,54 %	570	39,30 %	549	45,90 %		
	Low	368	39,67 %	185	37,84 %	183	41,53 %		
	Medium	352	42,61 %	175	38,29 %	177	46,89 %		
	High	399	45,11 %	210	41,43 %	189	49,21 %		

### 3.2 Econometric analysis

To evaluate if the level of consumption (H1) and targeted subject (H2) affect the probability that a participant chooses the positional alternative, we run a logistic regression on each domain separately. The outcome variable in these regressions takes the value one if the individual chose the positional alternative, and zero otherwise. We evaluate the effect of targeted subject with a dummy variable taking the value one if the participant chose for a hypothetical grandchild and zero if the participant chose for self. The reference level for the level treatment is the low level. To investigate if the participants' own circumstances affect their answers we include a dummy variable taking the value one if the participant has a child and grandchild, respectively. In addition, we include a dummy variable taking the value one if the level of consumption in the choice scenario was lower than or equal to the participants own real life endowment. We present the results in table (4), below.

**Table 4:** Correlates of positional preferences for each domain. Logistic regression with marginal effects

	SAT-score	House	Apartment	Vacation	Income
<b>Level treatment (low is baseline)</b>					

Medium	-0.0749*	0.0267	-0.0209	0.0307	0.0396
	(0.036)	(0.549)	(0.504)	(0.320)	(0.307)
High	-0.116**	0.0124	-0.00148	0.0853	0.0908*
	(0.006)	(0.782)	(0.972)	(0.096)	(0.039)
<b>Subject treatment</b>					
Grandchild	-0.0183	0.0569*	0.0401	0.0400	0.0655*
	(0.536)	(0.026)	(0.102)	(0.120)	(0.025)
<b>Gender (male is baseline)</b>					
Female	0.0365	0.0389	0.00778	0.0356	0.00842
	(0.231)	(0.141)	(0.759)	(0.179)	(0.781)
<b>Socio-demographics</b>					
Equal or lower level	0.124*	0.0227	0.0266	0.0770	-0.0628
	(0.019)	(0.667)	(0.519)	(0.133)	(0.221)
Have children	0.00910	-0.0748*	-0.0335	0.0110	0.000403
	(0.797)	(0.015)	(0.248)	(0.721)	(0.991)
Have grandchildre n	-0.00187	-0.0359	0.0519	-0.0377	-0.0397
	(0.967)	(0.371)	(0.203)	(0.345)	(0.383)
SAT-score	0.0155***	-0.000219	0.00279	0.0000120	0.00686*
	(0.000)	(0.928)	(0.230)	(0.996)	(0.012)
Size of home	0.00754	0.00461	0.00322	0.00273	0.00736
	(0.096)	(0.275)	(0.520)	(0.485)	(0.099)
Vacation days	-0.0109	0.00528	0.00518	0.0118	0.0111
	(0.181)	(0.451)	(0.445)	(0.160)	(0.168)
Income	0.000103	0.00509	0.00356	0.00676	-0.00505
	(0.985)	(0.279)	(0.431)	(0.154)	(0.507)
Age	-0.00231*	-0.00429***	-0.00229*	-0.00150	-0.00150
	(0.037)	(0.000)	(0.015)	(0.129)	(0.176)
N	1'119	1'119	1'119	1'119	1'119
pseudo R <sup>2</sup>	0.0186	0.0271	0.0199	0.0117	0.0177
chi <sup>2</sup>	25.66	33.94	23.29	14.55	26.99

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

As can be seen in table (4), the results suggest that subjects who evaluated scenarios with a high reference level are more likely to be positional about income and vacation days. This is in line with H1. The marginal effect of high values on positionality for income is about 9 percentage points, and for vacation days, it is 8.5 percentage points. However, we also find that subjects who saw either a high or medium reference level are *less* likely to be positional about SAT scores. This effect goes in the opposite direction of expected. Individuals deciding for a hypothetical grandchild are more likely to choose the positional option for the question on house (5.7 percentage points) and income (6.5 percentage points), which is in line with H2. We find no significant effects of the reference levels for size of apartment or size of house, and no significant effect of subject on SAT-score, size of apartment and vacation days.

We do not find strong evidence of a direct link between the participants' own situation and the level and targeted subject in the choice scenarios. The effect of having a real-life consumption level that is equal to or lower than the level in the choice scenario is insignificant in all domains except SAT-score. One reason for why participants, who has a relatively low SAT score are significantly more likely to be positional is that when undertaking a SAT-test, or any other test, your results in isolation are not important, but what matters is your relative performance.

Similarly, the effect of having children or grandchildren is insignificant in almost all cases. The exception is a negative effect of having children on the probability to be positional for housing. Regarding the remaining social demographics, only reported SAT-score appear to be significant for SAT-score and income, but neither of the other reported values are significant. From the table we observe that older individuals are less likely to be positional for SAT-scores, size of house and size of apartment, but with insignificant effect on vacation days and income. In line with existing research (e.g. Akay & Martinsson, 2019). We find no difference between genders.

The results presented above suggests that the conventional positionality instruments currently in use are insensitive to variations in consumption levels and targeted subject, in most cases. However, we also find suggestive evidence that level and targeted subject sometimes matter, especially for income and housing. To check if these results are robust along more than one dimension we ran the same regression using a linear probability model. Table (10) suggest that they are robust, with similar effect sizes and in the same direction as with the logistic regression setup.

#### **Section 4 – Discussion and concluding remarks**

The aim of this study was to test if the measurement instruments we use to elicit positional preferences are sensitive to variations in levels and targeted subject. Most studies use a single reference level to elicit positional preferences in a particular domain, and about 20% of studies use a grandchild as the target subject with the rest using the self when making decisions.

The use of a single level when measuring positional preferences is problematic if these preferences are sensitive to the given level of endowment in a particular domain. It is also problematic to use either the self or a grandchild as the targeted subject if we do not know whether one or the other is a better tool to elicit positional preferences. In this paper, we tested if positional answers are sensitive to consumption level and targeted subject in four domains (income, housing, vacation and intelligence) on representative sample (N=1300) from Prolific Academics. We used an experimental survey approach with a random assignment of three levels (low, medium and high) and targeted subject (self and grandchild). Furthermore, for each domain there are three possible levels - low, medium and high, all chosen based on real life minimum wage, score, home size or paid vacation, and all randomized between rounds.

Our results indicate that measurement instruments currently used to elicit positional preferences are relatively robust to variations in reference levels and targeted subject. We find little evidence for the hypothesis that a participant's current circumstances affect the

probability that he or she chooses the positional alternative. This finding is reassuring as it suggest that previous results are replicable.

However, our results also suggest that positional preferences for income and vacation days are sensitive to both variations in level and subject. More specifically, we find that a higher number of individuals choose the positional option when the scenario contain high values or when they choose for a grandchild, than when they choose between low values or themselves. This is an important finding, because both income and vacation days are important domains in life and the study of economic behavior.

In the logistic regression, we include several socio-demographic indicators, and the results suggest that older individuals are less likely to be positional for SAT-score, size of house and size of apartment. Individuals with children are less likely to display positional preferences for size of house, but not for any other positionality question, and there appear to be no significant effects from having grandchildren.

In future studies, researcher should explore further how consumption levels contribute to positional preferences by using different sample and by covering other domains. Additionally, we rewarded the subject equally as long as they completed the survey, giving them no incentive to choose one alternative over the other. In the future, someone should build this approach into a live experiment with real stakes, in order to elicit positional preferences when there is something to lose.

Since this study confirms that measuring positional preferences for income is challenging, it would have been interesting to extend this study to cover more than the three reference values we use, and to vary the marginal degree of positionality between rounds and participants.

The author declare that she has no conflict of interest.

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## APPENDIX

### A.1 Positionality questions

If the participant received subject *self* in the first question, they are deciding for themselves throughout the survey. Equally, if they instead received *grandchild* in the first question, they are deciding for this grandchild in all succeeding positionality questions.

The order of the positionality questions presented in this appendix does not reflect the order received by the participant. In analysis, I present the domains as *house size*, *SAT-score*, *apartment size*, *vacation days* and *monthly income*, which is also the sequence now. In the survey, this was random, and only by coincidence did the participant receive the same order as I am using here.

### A.1.1 SAT-test score

Before entering higher education, it is common to take an SAT-test to assess general suitability for education. In which of these states, do you think you would feel most satisfied?

#### SAT test score – low

- A. You/Your grandchild scored **350/1600** at the SAT-test this year. In society, people on average score **375/1600**.
- B. You/Your grandchild scored **325/1600** at the SAT-test this year. In society, people on average score **300/1600**.
- C. You/Your grandchild scored **325/1600** at the SAT-test this year. In society, people on average score **325/1600**.
- D. I do not want to answer.

#### SAT test score – medium

- A. You/Your grandchild scored **700/1600** at the SAT-test this year. In society, people on average score **750/1600**.
- B. You/Your grandchild scored **650/1600** at the SAT-test this year. In society, people on average score **600/1600**.
- C. You/Your grandchild scored **650/1600** at the SAT-test this year. In society, people on average score **650/1600**.
- D. I do not want to answer.

#### SAT test score – high

- A. You/Your grandchild scored **1400/1600** at the SAT-test this year. In society, people on average score **1500/1600**.
- B. You/Your grandchild scored **1300/1600** at the SAT-test this year. In society, people on average score **1200/1600**.
- C. You/Your grandchild scored **1300/1600** at the SAT-test this year. In society, people on average score **1300/1600**.
- D. I do not want to answer.

### A.1.2 Size of house

A stable home is essential to ensure quality of life. Regardless if you live alone or with your family, if is on permanent basis or only temporary. In which of these states, do you think you would feel most satisfied?

#### Size of house – low

- A. You/your grandchild and family have a house that is **1 500 square feet** large. In society, the average size of people's houses is **1 650 square feet**.
- B. You/your grandchild and family have a house that is **1 350 square feet** large. In society, the average size of people's houses is **1 200 square feet**.
- C. You/your grandchild and family have a house that is **1 350 square feet** large. In society, the average size of people's houses is **1 350 square feet**.
- D. I do not want to answer.

#### Size of house – medium

- A. You/your grandchild and family have a house that is **4 500 square feet** large. In society, the average size of people's houses is **4 950 square feet**.
- B. You/your grandchild and family have a house that is **4 050 square feet** large. In society, the average size of people's houses is **3 600 square feet**.
- C. You/your grandchild and family have a house that is **4 050 square feet** large. In society, the average size of people's houses is **4 050 square feet**.
- D. I do not want to answer.

#### Size of house – high

- A. You/your grandchild and family have a house which is **13 500 square feet** large. In society, the average size of people's houses is **14 850 square feet**.
- B. You/your grandchild and family have a house which is **12 150 square feet** large. In society, the average size of people's houses is **10 800 square feet**.
- C. You/your grandchild and family have a house which is **12 150 square feet** large. In society, the average size of people's houses is **12 150 square feet**.
- D. I do not want to answer.

### A.1.3 Size of apartment

Everybody needs a home, whether it is in the city or in areas that are more rural. It might be rented or it may be owned. Regardless of this, it is important to feel at home. In which of these states, do you think you would feel most satisfied?

#### Size of apartment – low

- A. You/your grandchild own an apartment that is **500 square feet** large. In society, the average size of people's apartments is **600 square feet**.
- B. You/your grandchild own an apartment that is **400 square feet** large. In society, the average size of people's apartments is **300 square feet**.
- C. You/your grandchild own an apartment that is **400 square feet** large. In society, the average size of people's apartments is **400 square feet**.
- D. I do not want to answer.

#### Size of apartment – medium

- A. You/your grandchild own an apartment that is **1 500 square feet** large. In society, the average size of people's apartments is **1 800 square feet**.
- B. You/your grandchild own an apartment that is **1 200 square feet** large. In society, the average size of people's apartments is **900 square feet**.
- C. You/your grandchild own an apartment that is **1 200 square feet** large. In society, the average size of people's apartments is **1 200 square feet**.
- D. I do not want to answer.

#### Size of apartment – high

- A. You/your grandchild own an apartment that is **4 500 square feet** large. In society, the average size of people's apartments is **5 400 square feet**.
- B. You/your grandchild own an apartment that is **3 600 square feet** large. In society, the average size of people's apartments is **2 700 square feet**.
- C. You/your grandchild own an apartment that is **3 600 square feet** large. In society, the average size of people's apartments is **3 600 square feet**.
- D. I do not want to answer.

#### A.1.4 Paid vacation days

During the year, the employed gives a certain amount of paid vacation days to its employees. In any state of the world, the wages and prices are the same. In which of these states, do you think you would feel most satisfied?

##### Vacation days – low

- A. You/Your grandchild get **12 days** of paid vacation this year. In society, people have on average **14 days** of paid vacation this year.
- B. You/Your grandchild get **10 days** of paid vacation this year. In society, people have on average **8 days** of paid vacation this year.
- C. You/Your grandchild get **10 days** of paid vacation this year. In society, people have on average **10 days** of paid vacation this year.
- D. I do not want to answer.

##### Vacation days – medium

- A. You/Your grandchild get **24 days** of paid vacation this year. In society, people have on average **28 days** of paid vacation this year.
- B. You/Your grandchild get **20 days** of paid vacation this year. In society, people have on average **16 days** of paid vacation this year.
- C. You/Your grandchild get **20 days** of paid vacation this year. In society, people have on average **20 days** of paid vacation this year.
- D. I do not want to answer.

##### Vacation days – high

- A. You/Your grandchild get **48 days** of paid vacation this year. In society, people have on average **56 days** of paid vacation this year.
- B. You/Your grandchild get **40 days** of paid vacation this year. In society, people have on average **32 days** of paid vacation this year.
- C. You/Your grandchild get **40 days** of paid vacation this year. In society, people have on average **40 days** of paid vacation this year.
- D. I do not want to answer.

### A.1.5 Monthly income before taxes

Prices and purchasing power are the same in all alternatives. The only difference is the monthly earnings. In which of these states, do you think you would feel most satisfied?

#### Monthly income – low

- A. You/your grandchild earn **USD 2 000** before taxes every month. In society, people earn on average **USD 2 300** each month before taxes.
- B. You/your grandchild earn **USD 1 700** before taxes every month. In society, people earn on average **USD 1 400** each month before taxes..
- C. You/your grandchild earn **USD 1 700** before taxes every month. In society, people earn on average **USD 1 700** each month before taxes.
- D. I do not want to answer.

#### Monthly income – medium

- A. You/your grandchild earn **USD 4 000** before taxes every month. In society, people earn on average **USD 4 600** each month before taxes.
- B. You/your grandchild earn **USD 3 400** before taxes every month. In society, people earn on average **USD 2 800** each month before taxes.
- C. You/your grandchild earn **USD 3 400** before taxes every month. In society, people earn on average **USD 3 400** each month before taxes.
- D. I do not want to answer.

#### Monthly income – high

- A. You/your grandchild earn **USD 8 000** before taxes every month. In society, people earn on average **USD 9 200** each month before taxes.
- B. You/your grandchild earn **USD 6 800** before taxes every month. In society, people earn on average **USD 5 600** each month before taxes.
- C. You/your grandchild earn **USD 6 800** before taxes every month. In society, people earn on average **USD 6 800** each month before taxes.
- D. I do not want to answer.

## A.2 Social demographics

- 1) What is your gender? (man, woman, other, no answer)
- 2) What is your birth year? (1944 or earlier, 1945, ..., 2003)
- 3) Do you have children? (year, no, no answer)
- 4) Do you have grandchildren? (yes, no, no answer)
- 5) What is your monthly income before tax? (USD 1000 or less, 1001-2000, ..., 9001-10000, 10 000 or more)
- 6) Do you hold a university degree? (yes, no, no answer)
- 7) If you have taken an SAT-test, what was your score? (300 or less, 301-400, ..., 1501-1600, have not taken an SAT-test, no answer)
- 8) Are you currently enrolled at a university? (yes, no, no answer)
- 9) How many days of paid vacation do you have each year? (5 days or less, 6 to 10 days, ..., 21 to 25 days, 26 or more days, no answer)
- 10) What is the size of your home in square feet? (200 or less, 201-400, 2601-2800, 2801 or larger)

### A.3 questions not related to analysis

#### A.3.1 Life satisfaction

*To what extent do you agree with the following statements? (1=strongly disagree, 7=strongly agree)*

- 1) In most ways my life is close to my ideal
- 2) The conditions of my life are excellent
- 3) I am satisfied with my life
- 4) So far I have gotten the important things I want in life
- 5) If I could live my life over, I would change nothing



### A.3.2 Positional preferences of others

Prices and purchasing power is the same in all states. In which states of the world does this individual feel most satisfied?

#### Monthly income – low

- A. His/her income is **USD 2 000** before taxes every month. In society, people earn on average **USD 2 300** each month before taxes.
- B. His/her income is **USD 1 700** before taxes every month. In society, people earn on average **USD 1 400** each month before taxes.
- C. His/her income is **USD 1 700** before taxes every month. In society, people earn on average **USD 1 700** each month before taxes.
- D. I do not want to answer.

#### Monthly income – medium

- A. His/her income is **USD 4 000** before taxes every month. In society, people earn on average **USD 4 600** each month before taxes.
- B. His/her income is **USD 3 400** before taxes every month. In society, people earn on average **USD 2 800** each month before taxes.
- C. His/her income is **USD 3 400** before taxes every month. In society, people earn on average **USD 3 400** each month before taxes.
- D. I do not want to answer.

#### Monthly income – high

- A. His/her income is **USD 8 000** before taxes every month. In society, people earn on average **USD 9 200** each month before taxes.
- B. His/her income is **USD 6 800** before taxes every month. In society, people earn on average **USD 5 600** each month before taxes.
- C. His/her income is **USD 6 800** before taxes every month. In society, people earn on average **USD 6 800** each month before taxes.
- D. I do not want to answer.

Prices and purchasing power is the same in all states. In which states of the world does this individual feel most satisfied?

#### Size of house – low

- A. His/her house is **1 500 square feet** large. In society, the average size of people's houses is **1 650 square feet**.
- B. His/her house is **1 350 square feet** large. In society, the average size of people's houses is **1 200 square feet**.
- C. His/her house is **1 350 square feet** large. In society, the average size of people's houses is **1 350 square feet**.
- D. I do not want to answer.

#### Size of house – medium

- A. His/her house is **4 500 square feet** large. In society, the average size of people's houses is **4 950 square feet**.

- B. His/her house is **4 050 square feet** large. In society, the average size of people's houses is **3 600 square feet**.
- C. His/her house is **4 050 square feet** large. In society, the average size of people's houses is **4 050 square feet**.
- D. I do not want to answer.

**Size of house – high**

- A. His/her house is **13 500 square feet** large. In society, the average size of people's houses is **14 850 square feet**.
- B. His/her house is **12 150 square feet** large. In society, the average size of people's houses is **10 800 square feet**.
- C. His/her house is **12 150 square feet** large. In society, the average size of people's houses is **12 150 square feet**.
- D. I do not want to answer.

## Appendix B

### B.1 Descriptive results

**Table 5:** Both subjects and low levels

	Absolute	Positional	Egalitarian	Sum
House	42,17 %	23,93 %	33,90 %	100,00 %
SAT	20,77 %	58,47 %	20,77 %	100,00 %
Apartment	46,30 %	21,64 %	32,05 %	100,00 %
Vacation	45,27 %	22,51 %	32,23 %	100,00 %
Income	34,78 %	39,67 %	25,54 %	100,00 %

**Table 6:** Both subjects and medium levels

	Absolute	Positional	Egalitarian	Sum
House	42,17 %	23,93 %	33,90 %	100,00 %
SAT	20,77 %	58,47 %	20,77 %	100,00 %
Apartment	46,30 %	21,64 %	32,05 %	100,00 %
Vacation	45,27 %	22,51 %	32,23 %	100,00 %
Income	34,78 %	39,67 %	25,54 %	100,00 %

**Table 7:** Both subjects and high levels

	Absolute	Positional	Egalitarian	Sum
House	31,93 %	23,75 %	44,33 %	100,00 %
SAT	27,89 %	52,63 %	19,47 %	100,00 %
Apartment	39,39 %	23,69 %	36,91 %	100,00 %
Vacation	39,39 %	24,79 %	35,81 %	100,00 %
Income	31,33 %	45,11 %	23,56 %	100,00 %

**Table 8:** Subject self and all levels

	Absolute	Positional	Egalitarian	Sum
House	41,05 %	22,11 %	36,84 %	100,00 %
SAT	25,96 %	55,09 %	18,95 %	100,00 %
Apartment	51,93 %	19,82 %	28,25 %	100,00 %
Vacation	45,44 %	22,63 %	31,93 %	100,00 %
Income	34,74 %	39,30 %	25,96 %	100,00 %

**Table 9:** Subject grandchild and all levels

	Absolute	Positional	Egalitarian	Sum
House	33,52 %	27,32 %	39,16 %	100,00 %
SAT	27,50 %	53,92 %	18,58 %	100,00 %
Apartment	42,08 %	23,68 %	34,24 %	100,00 %
Vacation	38,25 %	26,59 %	35,15 %	100,00 %
Income	30,05 %	45,90 %	24,04 %	100,00 %

## B.2 Linear probability model

**Table 10:** Correlates of positional preferences for each domain. Robust linear regression

	SAT-score	House	Apartment	Vacation	Income
<b>Level treatment (low is baseline)</b>					
Medium	-0.0759* (0.039)	0.0274 (0.548)	-0.0215 (0.492)	0.0327 (0.313)	0.0399 (0.307)
High	-0.118** (0.008)	0.0132 (0.774)	-0.000820 (0.985)	0.0863 (0.079)	0.0904* (0.040)
<b>Subject treatment</b>					
Grandchild	-0.0182 (0.540)	0.0562* (0.028)	0.0402 (0.103)	0.0401 (0.120)	0.0655* (0.027)
<b>Gender (male is baseline)</b>					
Female	0.0363 (0.238)	0.0384 (0.145)	0.00798 (0.752)	0.0357 (0.189)	0.00844 (0.781)
<b>Socio-demographics</b>					
Equal or lower level	0.125* (0.020)	0.0218 (0.675)	0.0262 (0.532)	0.0787 (0.115)	-0.0619 (0.233)
SAT-score	0.0156** (0.001)	-0.000136 (0.955)	0.00281 (0.210)	0.0000491 (0.984)	0.00692* (0.014)
Size of home	0.00748 (0.100)	0.00435 (0.331)	0.00310 (0.556)	0.00265 (0.497)	0.00739* (0.098)
Vacation days	-0.0108 (0.186)	0.00499 (0.494)	0.00501 (0.465)	0.0121 (0.170)	0.0112 (0.177)
Income	0.000133 (0.981)	0.00501 (0.327)	0.00370 (0.456)	0.00694 (0.164)	-0.00498 (0.522)
Age	-0.00230* (0.039)	-0.00401*** (0.000)	-0.00224* (0.017)	-0.00146 (0.140)	-0.00149 (0.177)
Have children	0.00872 (0.807)	-0.0721* (0.020)	-0.0341 (0.271)	0.0116 (0.714)	0.000543 (0.988)
Have grandchildren	-0.00141 (0.976)	-0.0283 (0.472)	0.0465 (0.200)	-0.0371 (0.353)	-0.0395 (0.391)
Constant	0.455*** (0.000)	0.387*** (0.000)	0.154 (0.124)	0.142 (0.229)	0.384** (0.001)
N	1'119	1'119	1'119	1'119	1'119
R <sup>2</sup>	0.025	0.029	0.020	0.013	0.024
F(12,1106)	2.53	2.93	1.74	1.20	2.36

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1