

# Attitudes on the Size of Unemployment Benefits: Ideology and Numbers

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The divide separating the political left from right is often expressed in specific numbers. The proper size of unemployment benefits is a key example of such a disagreement, with the left generally favoring higher levels of benefits than the right. However, little is currently known about how voters make up their mind on such policy relevant numbers. Using two survey experiments, this article shows that while Danish voters' attitudes on unemployment benefits are correlated with their ideological position, they may also be strongly affected by the ways in which politically relevant numbers are presented and elicited. Specifically, when making up their minds on such numbers, voters are highly susceptible to anchoring effects and a unit effect. Furthermore, voters are affected more by precise numbers than by round numbers. Together, these results suggest that political actors may in some cases move public opinion closer to specific policy positions simply by presenting the relevant numbers in certain ways.

## Introduction

Political discussions and policy proposals do not just refer to ideological principles and positions; they also refer to amounts and statistics on, for example, the minimum wage, tax rates and unemployment. This is a reflection of the fact that numbers play a key part in modern politics (Mutz 1998, 35–8; Prévost & Beaud 2012). For citizens, making up one's mind about specific policies is therefore to some degree a question of making up one's mind about numbers. This is also the case on the issue of unemployment benefits, where right-leaning politicians and parties generally argue for modest benefits, whereas left-leaning politicians propose more generous benefits (Feather 1985).

Making up one's mind about policy is often simply a matter of determining whether the policy is in line with one's political predispositions. Often, citizens can do this simply by determining whether it originates from a source with whom they share party identity or political ideology (Converse

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1964; Cohen 2003). However, the opinion formation process by citizens can sometimes also be strongly affected by the way in which a policy is presented and framed. Citizens are affected, for example, by information regarding specific individuals affected by a policy (Ostfeld & Mutz 2014), by explicit linkages between policy and core values (Nelson et al. 1997), and by the specific words used to describe a policy (Zaller 1992; Schaffner & Atkinson 2009). The literature on opinion formation has, however, mostly investigated frames, values and preferences that are non-numerical in nature, and it has therefore mostly disregarded several psychological mechanisms through which the presentation and framing of numbers may also affect the stated political preferences of the citizens.

This article adds to the literature on opinion formation by showing several ways in which the presentation of policy relevant numbers may affect voters' policy positions. Specifically, using two survey experiments with population-based samples of Danish citizens, the article demonstrates how attitudes regarding the proper size of unemployment benefits can be affected by a unit effect (Pandelaere et al. 2011), anchoring effects (Furnham & Boo 2011), and a precision effect (Mason et al. 2013). The results show that the effects of these numerical manipulations are substantial in size, and they indicate that politicians can move voters' positions on politically relevant numbers simply by presenting such numbers in the right way.

## From Perceptions and Attitudes to Pecuniary Answers

Before we look closer at the relationship between numbers and attitudes on unemployment benefits, it is worth noting that unemployment is regarded as a serious problem across the political spectrum. However, while the left and right agree on the desirability of low levels of unemployment, the two sides differ in their perceptions of the unemployed. When viewed from the left side of the political spectrum, an unemployed individual is generally seen as a victim of bad luck, a sluggish economy or other structural factors and therefore clearly deserving of assistance. In contrast, when viewed from the right, unemployment is to a larger degree perceived to be a consequence of personal choices and characteristics of the unemployed, such as laziness. In line with these perceptions, the right side is therefore more skeptical of generous welfare benefits than the left (Feather 1985; Skitka & Tetlock 1993; Petersen et al. 2012). This is also the case in Denmark, where left-leaning voters and parties have been in favor of retaining or increasing the size of unemployment benefits, while right-leaning voters and parties have argued that high unemployment benefits disincentivize the unemployed from finding employment (Kosiara-Pedersen 2016; Stubager & Seeberg 2016).

Seeing as the left and the right differ in their attitudes on unemployment benefits, it is fair to assume that the left-right position of a voter is an important predictor of the voter's reaction to specific suggestions regarding the size of unemployment benefits; left-wing voters will tend to favor higher amounts than right-wing voters. However, left-right position does not automatically translate into a specific number. A right-wing voter may prefer meager unemployment benefits, but how much is that, exactly? In order for the voter to arrive at a position regarding the proper size of unemployment benefits, the voter cannot rely solely on her ideological predisposition; she must also tend to the numbers presented to her and determine whether these numbers are indeed meager or generous. This is not necessarily an easy task, and the next sections will show how several cognitive heuristics and associated biases may affect the voters when they are making up their mind regarding the proper size of policy relevant numbers.

### *The Effect of Units*

When talking about unemployment benefits, a specific weekly amount is obviously equivalent to a specific monthly amount. Logically, such units of measurement are completely interchangeable. However, studies on unit effects have shown that people's subjective evaluations of numbers are in some cases highly contingent on the unit used in conjunction with the number. In a classic study from consumer research, Gourville (1998) demonstrated how marketers can successfully employ the 'pennies-a-day' strategy by temporally reframing costs as small ongoing costs rather than a larger, infrequent sum. One such example of temporal reframing is to reframe a yearly donation of US\$350 as a daily cost of US\$1, making the donation appear to be smaller. Multiple later studies on consumer psychology have confirmed these findings (e.g., Burson et al. 2009).

While Gourville (1998) and several later studies in consumer psychology focused on temporal framing of monetary expenses, analogous unit effects have also been found elsewhere. Within cognitive psychology, Yamagishi (1997) found, for example, that people perceived a disease to be riskier when the mortality rate was described as '1,286 out of 10,000 people' than when it was described as killing '24.14 out of 100 people'. In general, unit effects seem to be a highly general phenomenon across domains (Denes-Raj et al. 1995; Pedersen & Mutz 2018). Recently, Pedersen (2017b) demonstrated that unit effects may also affect people's attitudes within the domain of politics. Similar to the temporal reframing used by Gourville, this study shows that people are less likely to accept a tax increase of US\$420 per year than a – logically equivalent – tax increase of US\$35 per month (Pedersen 2017b; see also Pedersen & Mutz 2018).

Across the different fields of research, comparable unit effects have been described using several different terms, such as ‘ratio bias’, ‘numerosity’, ‘denominator neglect’ and simply ‘unit effects’ (Pedersen 2017b). Similarly, the different fields have used different ways of describing the exact mechanism underlying this effect, applying, for example, either theoretical models specifically focused on consumer choices (Gourville 1998) or general theories such as cognitive-experiential self theory (Denes-Raj et al. 1995).<sup>1</sup> However, despite differences in terminology and exact theoretical models, the studies on unit effects are based on the same general observation – namely that people tend to infer higher quantity from larger numbers (Lembregts & Pandelaere 2012), and people’s perceptions of the size of a number therefore tend to change when the unit attached to the number is changed (although, for contexts in which unit effects are less likely to emerge, see Lembregts & Pandelaere 2012; Schley et al. 2017).

In the context of unemployment benefits, the literature on unit effects therefore leads us to the expectation that people will tend to perceive unemployment benefits are more meager when the unit used to describe benefits/time is based on small denominator. I therefore propose the following hypothesis:

*H1 (Effect of unit):* The preferred size of unemployment benefits will be larger when presented with a small (weekly) denominator than when presented with a large (monthly) denominator.

### *The Effects of Anchors*

Political discussions on the proper size of unemployment benefits may invoke both numbers on the current size of unemployment benefits and on specific suggestions for lower or higher levels of benefits. Such numbers may serve as anchors, which affect a voter’s opinion formation. The anchoring effect denotes the effect that when making judgment and decisions, people are affected by initially presented values – even in cases where these values are clearly arbitrary or random (Chapman & Johnson 1994; Furnham & Boo 2011).

The seminal experimental demonstration of the anchoring effects was done by Tversky and Kahneman (1974), in which they asked participants to estimate the share of African countries in the United Nations after being presented with a clearly random number. While participants knew these numbers to be randomly generated, the numbers nevertheless turned out to affect the respondents’ answers: respondents who had been given a high random number provided higher estimates than respondents provided with a low random number. Subsequent studies have shown that the anchoring

effect is a highly ubiquitous effect. The anchoring effect has been demonstrated, for example, in forecasting (Critcher & Gilovich 2008), value estimations (Northcraft & Neale 1987) and even in risk assessment of nuclear war (Plous 1989).

Following Tversky and Kahneman (1974), studies of anchoring have mostly investigated how anchoring affects subjective judgments of facts rather than preferences (Ariely et al. 2003). Recent studies have, however, also demonstrated that anchoring works not only when people are asked to estimate what a factual number *is*, but also when asked to provide a normative assessment of what a given number *should be* – for example, anchoring influences willingness to pay (Loschelder et al. 2016), retirement savings (Choi et al. 2017), and attitudes on income inequality (Pedersen & Mutz 2018). Furthermore, while earlier anchoring studies focused almost exclusively on the effect of random numbers (e.g., Tversky & Kahneman 1974), more recent studies have often investigated the effects of non-random anchor values (Thaler & Sunstein 2008; Zhao & Linderholm 2011; Loschelder et al. 2016; Beshears et al. 2017). This is also reflected in the various definitions of anchoring effects. Whereas early studies often defined the term as effects of information ‘clearly designated as irrelevant and uninformative’ (Kahneman 1992), more recent literature often defines it as the effects of ‘initially presented values’ (Furnham & Boo 2011), without necessarily requiring these values to be random and uninformative.

This more expansive notion of anchoring arguably makes it much more relevant for studies within the domain of politics. It is, after all, difficult to imagine politicians proposing explicitly random numbers on the size of unemployment benefits. It also means that the effect of such anchor values cannot be reduced to one particular causal mechanism, for example, the mechanism of ‘insufficient adjustment’ originally proposed by Tversky and Kahneman (1974). Anchoring effects may instead be thought of a ‘class of effects’ caused by multiple different psychological mechanisms (Turner & Schley 2016). It is beyond the scope of this study to investigate all potential mechanisms through which anchoring effects may occur, but it is worth noting that anchoring effects of non-random numbers may to some degree be driven by an individual simply accepting the anchor, similar to a demand effect (as suggested by Chapman & Johnson 2002). This seems particularly relevant when studying voters’ reactions to proposal from politicians, where it is likely that some individuals accept the proposals coming from the politicians. In sum, based on the many existing studies on anchoring, I propose the following hypothesis:

*H2 (Effect of anchor):* The preferred size of unemployment benefits will be affected by anchor values.

As shown above, the anchoring effect has been demonstrated countless times across several domains. It is, in fact ‘unusual in experimental settings not to be able to demonstrate it’ (Furnham & Boo 2011). As such, this is not a particularly bold hypothesis, but it is pertinent for two reasons. First, I investigate the impact of an anchoring effect in political, normative assessments not only to see whether it exists, but to investigate just how powerful this effect is in politics. Second, I test for an overall anchoring effect because such an effect is related to the next, arguably, more surprising effect: the precision effect.

### *The Effect of Precision*

Politicians debating and suggesting changes to unemployment benefits are not just able to choose their preferred level of benefits and the units in which these benefits are presented; they are also able to choose the precision of the numbers they use. They may, for example, choose to present a proposed level of benefits using round numbers (e.g., 7,000 DKK/week), but they may also choose to use precise – that is, non-round – numbers (e.g., 6,923 DKK/week). Substantially, these numbers differ by approximately just 1 percent, and one could argue that such a small difference is unimportant from a policy perspective. However, several studies on the psychology of negotiations and appraising suggest that the difference in precision may have an effect on how voters respond to these numbers because precise numbers serve as stronger anchors than round numbers (Loschelder et al. 2014). For example, real estate listed with a precise list price tends to sell at a price closer to this list price than real estate listed with a round price (Janiszewski & Uy 2008; Thomas et al. 2010). This seems to be a general effect; people adjust more away from round than from precise anchors in estimation tasks (Jerez-Fernandez et al. 2014). The results of these studies lead to the following hypothesis:

*H3 (Effect of precision):* Precise numbers serve as stronger anchors than round numbers on the preferred size of unemployment benefits.

The exact psychological mechanism behind the stronger anchoring effect of precise numbers is still not settled. Janiszewski and Uy (2008) suggest that precise numbers serve as stronger anchors because they invoke a more fine-grained subjective representational scale in the individual *receiving* the numbers. Hence, when an individual is presented with a precise anchor, this individual will tend to adjust away from the anchor on a mental scale with a finer resolution. However, several later studies indicate that the potency of precise numbers may also be due to the signal that such numbers send about the individual *offering* the number. Specifically,

precise numbers tend to be seen as more informed and reasoned than round ones because precision conveys an impression of confidence and expertise (Mason et al. 2013; Jerez-Fernandez et al. 2014; Loschelder et al. 2014).<sup>2</sup> Hence, whenever people use precise numbers, we tend to assume that they have good reasons for doing so (Zhang & Schwarz 2013). Based on these results, I propose the following hypothesis:

*H4 (Precision and perceptions about presenter):* Precise numbers has a positive effect on the perceived seriousness and knowledge of the actor providing the number.

### *Effects of Units, Anchors and Precision in Politics?*

There is little reason to doubt the existence or relevance of unit, anchor and precision effects. As shown above, such effects have been documented across multiple different domains. However, they have rarely been investigated in the domain of politics, and one could easily imagine that domain specific factors might play a role in moderating these effects. For example, the effects could potentially be minimized or disappear entirely because citizens, in this domain, are so strongly influence by ideological or partisan considerations (Converse 1964; Cohen 2003; Bolsen et al. 2014). Such a complete elimination of effects seems unlikely, seeing as unit effects have been documented within the domain of politics (Pedersen 2017b), and given the generally strong effects of anchoring across domains (Furnham & Boo 2011). Nevertheless, political predispositions could affect unit, anchor and precision effects in other ways. Effects could, for example, potentially be strongest among the centrist voters without a clear ideological commitment because left-leaning and right-leaning voters could be more inclined to disregard the presentation of numbers, and instead rely on purely ideological considerations. Again, existing studies have not shown any clear indications of a moderating role of political predispositions on such numerical effects (Pedersen 2017b), but in the interest of completeness, this study also explores whether unit, anchor and precision effects are contingent on voters' ideological left-right position.

It is also important to note that the present study on attitudes regarding unemployment benefits was conducted within the context of Danish politics. Denmark is often regarded as a prototypical example of a welfare state, and unemployment benefits are, comparatively speaking, generous (Jensen et al. 2018). However, the conditions and size of unemployment benefits are not beyond political disagreements. The rules regarding unemployment benefits have routinely been changed, including several reforms in the years prior to this study (Bredgaard & Madsen 2018; Jensen et al. 2018). Furthermore, the experiments were conducted approximately six months

after a parliamentary election, which saw the power shift from a left-leaning government coalition led by the Social Democrats to a right-leaning government led by the Liberals. Notably, in the election campaign preceding this parliamentary election, the Liberals campaigned on a promise to increase the gap between unemployment benefits and income for the employed. However, labor market policy and unemployment was not on top of the voters' agenda, as they generally perceived immigration and health care to be more important issues (Hansen & Stubager 2017).

## Experiment 1

The experiment was conducted in a commercial web panel (YouGov). Members of the panel were invited by email to participate in the period 23 November–4 December 2015. With 1,079 respondents starting the survey and 1,058 respondents completing the experiment, the completion rate was 98 percent, and drop-off after exposure to the experimental stimuli did not differ significantly across experimental conditions ( $p = 0.257$ ). The final sample of respondents was demographically diverse and approximately representative on the Danish population on gender and age (52 percent female, mean age; 46 years), albeit with higher levels of education (56 percent had completed tertiary education). For additional sample and population characteristics, see Online Appendix A.

### *Measures and Experimental Stimuli*

After placing themselves on the political left-right scale, respondents were randomly assigned to one of the five conditions. Traditionally, most studies of anchoring have applied a two-step procedure, where respondents are first presented with an anchor value and asked to respond whether the target value is more or less than this anchor value. Second, respondents are then asked to provide a numerical estimate of the target value (Chapman & Johnson 2002). Because this experiment presented people with a non-random, and to some perhaps reasonable anchor on unemployment benefits, the procedure was adjusted so that respondents were given the choice to respond that the proposed anchor value was too high, too low or that it was reasonable. Similar to a traditional anchoring experiment, respondents were then asked to provide their own specific value, unless they had indicated that the anchor value was reasonable – in that case, their preferred value was set to the anchor value, which they had just judged to be reasonable.

In Experiment 1, conditions one and two were low-anchor conditions, in which respondents were asked whether the current size of unemployment benefits was reasonable. While condition one used the weekly amount

4,135 DKK/week, condition two used the corresponding monthly amount of 17,918 DKK/month. In contrast, conditions three, four and five were high-anchor conditions, in which respondents were presented with a proposed size of unemployment benefits that was markedly higher than the current size. Condition three used a weekly, precise format of 6,923 DKK/week, condition four used a weekly, rounded format of 7,000 DKK/week and, finally, condition five used a monthly format of 30,000 DKK/month. These rates would increase unemployment benefits by approximately 67 percent compared to the status quo. While this increase may seem unrealistic, it had actually been suggested by the Red-Green Alliance, one of the parties represented in the Danish parliament. To avoid party cues exerting too strong an influence on respondents, the experimental stimuli did not include an explicit party cue (similar to, e.g., Campbell & Cowley 2015). For exact wording of all the questions, see Online Appendix B.

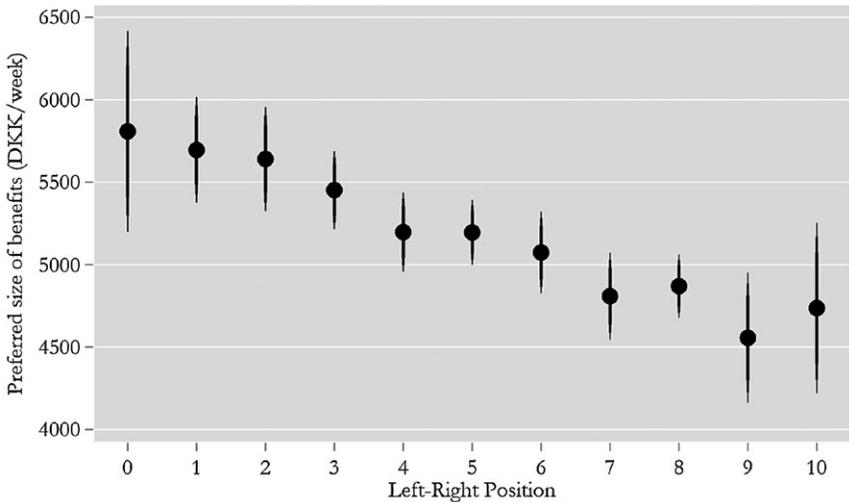
### *Results*

The key dependent variable in the analyses of experiment one is the preferred size of unemployment benefits. While respondents answered in different formats (weekly versus monthly), all responses are converted to the weekly unit in the analyses in order to facilitate ease of comparison. Furthermore, the analyses are based on 5 percent trimmed means within each experimental condition to account for the outliers that commonly occur when respondents provide numbers as answers.<sup>3</sup>

Before we turn to the effects of the experimental manipulation, it is worth noting that there is a clear association between the ideological left-right position of the respondents and their preferences regarding the size of unemployment benefits.<sup>4</sup> Even without explicit party cues, respondents generally seem to connect the question of the proper size of unemployment benefits with their own ideology. As shown in Figure 1, the preferred size of unemployment benefits decreases approximately linearly as one moves from the left end of the spectrum to the right. The correlation between the two measures is moderate,  $r(1,012) = -0.23$ ,  $p < 0.001$ .<sup>5</sup>

Next, to address the effect of the experimental manipulation, Figure 2 shows the preferred size of unemployment benefits, conditional on experimental condition. Following the hypothesis on anchoring, we would expect mean preferences on benefits to be higher when the respondent had been exposed to the proposed high anchor (conditions three–five), as opposed to the low anchor (conditions one and two). The results are clearly in line with this hypothesis, as the preferred levels of benefits are markedly lower for respondents exposed to the current level of benefits than for respondents exposed to the higher, suggested, level of benefits (both conditions one and two differ from conditions three, four and five at  $p < 0.001$ ). In other words,

Figure 1. Preferred Unemployment Benefits Conditional of Left-right Position.



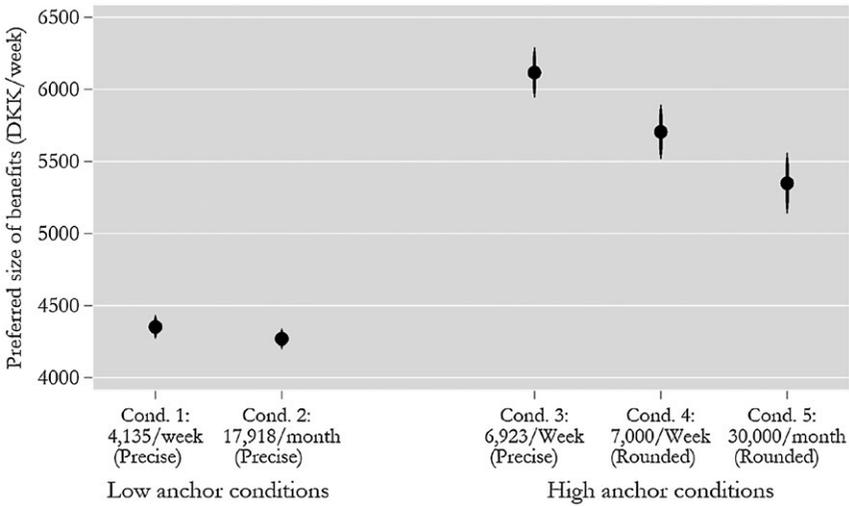
Note: Values are trimmed means with 95% C.I. (n=1,012).

peoples' stated preferences seem to be anchored strongly on whatever value they are presented with.

It should be noted that a very large share of the respondents accepted the number presented to them, as shown in Table 1. Averaging across the conditions, 48 percent of the respondents accepted the anchor value presented. Thus, it seems that the anchoring effect in this experiment is predominantly caused by a demand effect, where respondents tend to say 'yes' to the number presented to them. For example, when comparing condition one and three (this comparison provide the cleanest estimate of the anchoring effect because unit and precision is held constant), the difference in preferred size of benefits is 1,764 DKK/week ( $p < 0.001$ ). If one were to exclude from the analyses all the respondents accepting the anchor, this difference would decrease substantially to just 518 DKK/week (but remain significant, at  $p = 0.003$ ).

However, while exclusion of respondents accepting the anchor would completely eliminate the part of the anchoring caused by a demand effect, this analytical strategy would amount to conditioning on post-treatment variables, undermining the inferential value of the experimental randomization (Montgomery et al. 2018), and in all likelihood provide a biased estimate of anchoring effect absent of demand effects. As just one example of how such conditioning on post-treatment variables could bias estimates, we can observe that respondents' acceptance of the anchor value is clearly

Figure 2. Preferred Unemployment Benefits Conditional on Experimental Condition.



Note: Values are trimmed means with 95% C.I. (n=1,012).

Table 1. Share of Respondents Accepting the Anchor Value

Experimental condition		Share (95% C.I.)
Low anchor	Condition 1: 4,135 DKK/week (precise)	67% <sub>A</sub> (0.61–0.74)
	Condition 2: 17,918 DKK/month (precise)	68% <sub>A</sub> (0.62–0.75)
High anchor	Condition 3: 6,923 DKK/week (precise)	50% <sub>B</sub> (0.43–0.57)
	Condition 4: 7,000 DKK/week (rounded)	37% <sub>C</sub> (0.30–0.44)
	Condition 5: 30,000 DKK/week (rounded)	33% <sub>C</sub> (0.27–0.39)

Notes: Values not sharing a subscript letter differ significantly at the 5 percent level (n=1,012). C.I. = confidence interval.

correlated with their ideological left-right position, as right-leaning respondents are more likely to accept the low-anchor value ( $r(431) = 0.15, p = 0.002$ ), while they are less likely to accept the high anchor value ( $r(644) = -0.22, p < 0.001$ ). Thus, by excluding respondents based on their reactions to the proposed anchor, one would end up with treatments groups, which would differ systematically from each other on this variable – and most likely a host of other, unobserved, variables.<sup>6</sup> Therefore, one cannot cleanly partition the observed anchoring effect into a demand effect and other anchoring effects, but it is clear from the results that there is a strong overall anchoring effect.

Next, the hypothesis on unit effects tells us that we should expect to see higher means when respondents are asked about weekly, as opposed to

monthly, benefits. The findings on this are mixed: for respondents presented with the current rate (low anchor), the preferred rate is 4,352 DKK/week when asked with a weekly unit (condition one) and 4,270 DKK/week when asked with a monthly unit (condition two). This difference is in the expected direction, but it is not statistically significant ( $p = 0.14$ ). However, for the respondents presented with the suggested higher rate, preferences differ markedly across units: respondents presented with the monthly number in condition five have an average preferred rate of 5,349 DKK/week, which is significantly lower than the preferred rate of 6,116 DKK/week among respondents presented with the precise weekly rate in condition three ( $p < 0.001$ ), and the preferred rate of 5,705 DKK/week among respondents presented with the rounded weekly rate in condition four ( $p = 0.013$ ). These differences are substantial and clearly in line with the hypothesis on unit effects.

Why do we see these mixed results with small, statistically insignificant unit effects among respondents presented with the current rate (low anchor) and strong, highly significant unit effects among respondents presented with the suggested higher rate (high anchor)? A probable explanation for this pattern is that the unit effect across conditions one and two is attenuated by respondents having a strong preference for status quo.<sup>7</sup> Compared to the respondents presented with the proposed – new – rate (in conditions three–five), the respondents presented with the current rates (in conditions one and two) were far more likely to simply accept the rate presented to them (status quo) or to make relatively modest adjustments from the status quo. Hence, this relatively strong preference for the status quo probably limited the unit effect in these conditions.

To estimate the effect of numerical precision, we can compare conditions three and four, which both presented the suggested weekly numbers. According to the hypothesis, we should expect that the precise number serves as a stronger anchor than the rounded number. Since respondents' adjustments away from this anchor were almost always downward, we should therefore expect to see a higher preferred rate when respondents were presented with the rounded number.<sup>8</sup> This is also what we see. Respondents presented with the precise anchor ended up with a mean preferred rate of 6,116 DKK/week, whereas respondents presented with the, slightly larger, rounded anchor ended up with a mean preferred rate of 5,705 DKK/week – a substantial and clearly significant difference ( $p < 0.0001$ ). This result is perfectly in line with *H3* and the findings from earlier studies; in price negotiations, *lowering* the starting offer slightly from a round to a non-round numbers will tend to result in a *higher* final selling price (Janiszewski & Uy 2008; Thomas et al. 2010).

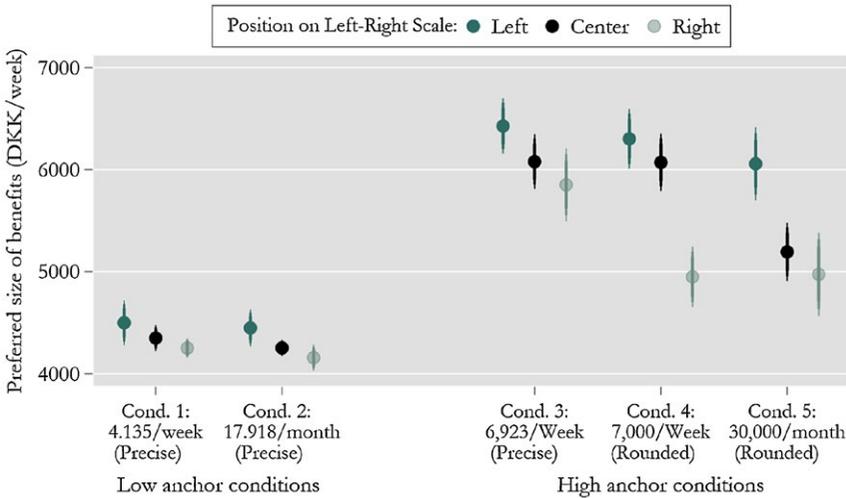
Finally, in order to estimate the degree to which unit, anchor and precision are contingent on the Danish voters' ideological left-right position, I

regress preferred benefits on experimental condition and political predisposition, and the interaction term of these two variables (not assuming linear effects, political predisposition is treated as a categorical variable in this regression, with respondents categorized as being left, center or right, based on their self-placement on the left-right scale). The results of this regression are shown in Figure 3.

As one can see in the figure, the anchoring effects are found among all subgroups of Danish voters. Even among the right-leaning voters, the high anchor conditions increase the stated preferences regarding unemployment benefits, although the anchoring effects are generally much stronger among the left-leaning respondents. Conversely, the unit effect seems to be stronger among the right-leaning voters, while the precision effect is strongest among right-leaning voters. Thus, there is no clear pattern in the relationship between all the treatment effects and ideological predispositions, but it is clear that all groups of voters are affected by one or more types of treatments. Thus, political predispositions do not seem to inoculate voters from the effects caused by different ways of presenting numbers, even when they are exposed to a proposal that clearly maps onto the left-right dimension.<sup>9</sup>

In sum, Experiment 1 showed that unit, anchor and precision effects can affect stated political preferences among Danish voters. The most noteworthy result is arguably the precision effect: the existence of an anchoring effect was clearly to be expected, given the previous robustness of these effects

Figure 3. Preferred Unemployment Benefits Conditional on Experimental Condition and Left-right Position. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]



Note: Values are trimmed means with 95% C.I. (n=1,012).

(Furnham & Boo 2011), and unit effects have previously been documented within the domain of politics (Pedersen 2017b). Therefore, Experiment 2 was set up to further investigate the precision effect, and to address the limitations in Experiment 1's investigation of this effect. First, while the precise number ('6,923') was only marginally smaller than the rounded number ('7,000'), respondents might have perceived the former number to be substantially smaller because of *leftmost-digit-bias*, which denotes that people tend to pay excessive attention to the leftmost digit and ignore digits further to the right (Olsen 2013). Thus, the mechanism underlying the apparent precision effect found in Experiment 1 could be leftmost-digit-bias rather than a precision effect. Second, the results of Experiment 1 do not reveal whether the precision of the number affects respondents' perceptions of the actor providing the number, as proposed by *H4*. To address these limitations, Experiment 2 was conducted.

## Experiment 2

Experiment 2 was conducted in the same commercial web panel as experiment one from 15 December 2015 until 7 January 2016. None of the respondents from Experiment 1 participated in Experiment 2. A conservative power calculation, based on the results from Experiment 1, suggested that a larger sample size was sensible.<sup>10</sup> Therefore, the target sample size was doubled for Experiment 2. With 2,152 respondents starting the survey and 2,036 respondents completing the experiment, the completion rate was 95 percent, and drop-off after exposure to the experimental stimuli did not differ significantly across experimental conditions ( $p = 0.514$ ). The final sample in Experiment 2 was approximately similar to the sample in Experiment 1 in terms of demographics (for sample characteristics, see Online Appendix A).

### *Experimental Stimuli and Measures*

To further investigate the precision effect, Experiment 2 contained three experimental conditions, all presenting the suggested higher level of unemployment benefits in a weekly format. Conditions one and two were identical to two of the conditions used in experiment one, presenting either the precise rate (6,923 DKK/week) or the rounded rate (7,000 DKK/week). Condition three also used a precise format, but to address the possible confounding effect of perceived size and leftmost-digit-bias, condition three used a marginally higher number (7,078 DKK/week).

Furthermore, to investigate whether the precision of numbers also affect the respondents' perceptions of the actor providing the numbers, respondents were also asked to indicate their agreement with six statements

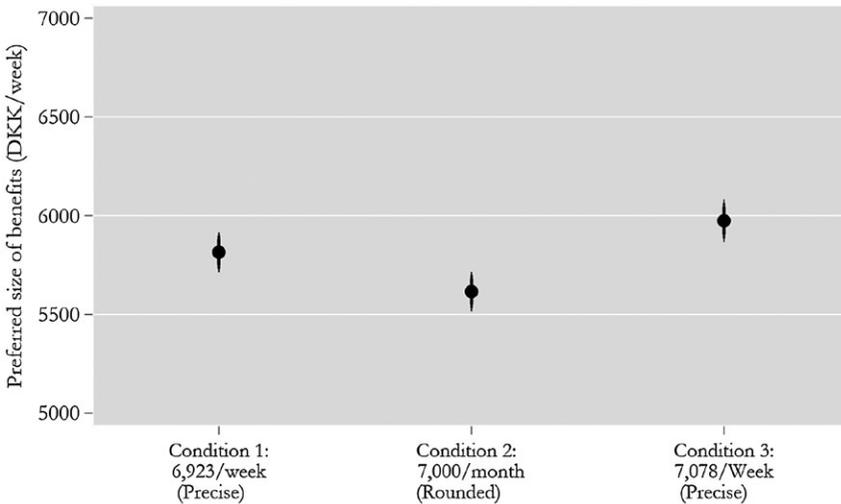
regarding the proposal and the party behind the proposal (e.g., whether the proposal seemed serious). These six items all loaded on one factor and formed a reliable index,  $\alpha = 0.85$  (see Online Appendix B for the exact wording).

### Results

Is it really possible for a political actor to affect the Danish voters' stated preferences on unemployment benefits simply by using precise numbers in their proposals? The results in Figure 4 below indicate that the answer to this question is clearly 'yes'. The trimmed mean for preferred unemployment benefits is 5,616 DKK/week among respondents presented with the rounded number in condition two, while it is 5,815 DKK/week among respondents presented with the precise rate in condition one and 5,974 DKK/week among respondents presented with the marginally higher precise rate in condition three. The results of Experiment 2 thereby replicate the finding from Experiment 1.

While the difference between conditions one and two are somewhat smaller than the difference between the same conditions in Experiment 1, the effect is still clearly significant ( $p = 0.006$ ). Furthermore, the results for condition three reveal that the effect is not caused by leftmost-digit-bias: when comparing conditions two and three, it becomes clear that a precise number slightly higher than the rounded number still result in

Figure 4. Preferred Unemployment Benefits Conditional on Experimental Condition.



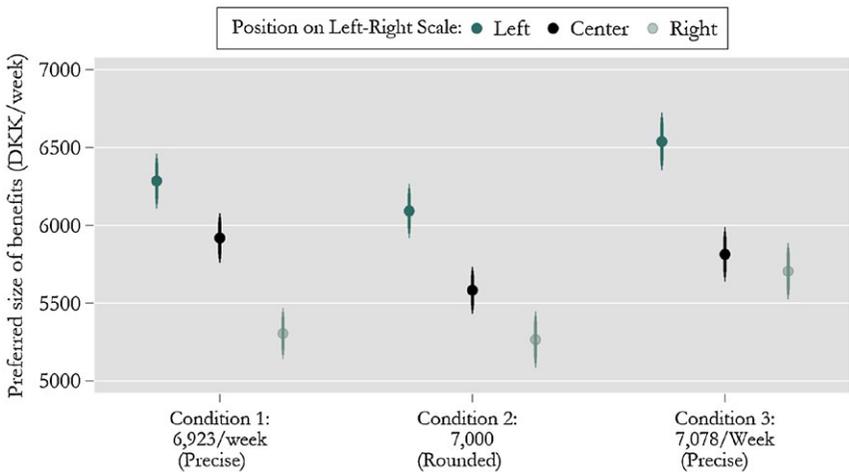
Note: Values are trimmed means with 95% C.I. (n=1,913).

an effect, as expected in *H3* ( $p < 0.001$ ). These precision effects may seem relatively small when viewed in Figure 4, but the difference of 358 DKK/week between conditions two and three is slightly larger than the average difference between respondents placing themselves one standard deviation away from each other on the left-right scale. In other words, while the effect of using a precise rather than a rounded number does not overpower the influence of political predispositions, it can in some cases move stated preferences substantially.

In addition, Figure 5 shows that the precision effect seems to work across the entire political spectrum: compared to the rounded number in condition two, the precise numbers in conditions one and three always result in higher means for preferred unemployment benefits, regardless of whether we look at the means among left-leaning respondents, centrists or right-leaning respondents. With the smaller subsamples in this analysis, these differences between conditions are not all statistically significant. However, an overall test of precise versus rounded (i.e., a test where one collapses the precise conditions one and three) shows significantly higher values when voters are exposed to a precise, as opposed to a rounded, value, regardless of whether the voter is left-leaning, centrist or right-leaning ( $p < 0.05$  for all three groups of voters).

The final question in the analysis is then whether this precision effect is associated with significant effects on perception of the actor providing the number, as suggested by *H4*. The answer to this question is ‘no’. A one-way

Figure 5. Preferred Unemployment Benefits Conditional on Experimental Condition and Left-right Position. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]



Note: Values are trimmed means with 95% C.I. ( $n=1,931$ ).

ANOVA reveals that the experimental conditions had no significant effect on the six-item index of voters’ perception of the party behind the proposal ( $F(2, 1728) = 0.42, p = 0.66$ ). Even if we analyze all six items separately, the effect of the treatment remains insignificant ( $p > 0.26$  for all analyses). This suggests that the precision effect is not mediated by perceptions regarding the sender of the proposal, as argued by Zhang & Schwarz (2012, 2013), but rather a scale effect as initially suggested by Janiszewski and Uy (2008). This interpretation of the results is arguably also supported by the fact that precision did not seem to have an effect on the respondents’ likelihood of accepting the anchor value.

As one can see in Table 2, there is a slight tendency for the precise conditions to achieve a higher acceptance rates, but the shares in these conditions are not significantly higher than the share of respondents’ accepting the rounded numbers. In any case, the analysis does suggest that politicians may end up moving public opinion closer to their position on the size of unemployment benefits – or other numbers – if they use precise numbers in their policy proposals.

## General Conclusion and Discussion

As shown by the two survey experiments in this article, there are several ways in which political actors may be able to move support for a specific policy simply by presenting and framing the relevant numbers in a certain way. First, stated preferences for unemployment benefits can be affected by the unit in which such benefits are presented. As shown in Experiment 1, this effect does not necessarily always occur: a change of unit did not significantly affect stated preferences among respondents presented with the existing unemployment rates. However, among the respondents presented with a proposed, new rate of unemployment benefits, simply changing the denominator from a monthly to weekly rate of benefits had a significant and substantial effect. Respondents ended up with higher preferred amounts when presented with a weekly than a monthly denominator. This result is in line with several studies finding such unit effects in several different

Table 2. Share of Respondents Accepting the Anchor Value

Experimental condition	Share (95% C.I.)
Condition 1: 6,923 DKK/week (precise)	39% <sub>A</sub> (35–43)
Condition 2: 7,000 DKK/week (rounded)	34% <sub>A</sub> (30–38)
Condition 3: 7,078 DKK/week (precise)	37% <sub>A</sub> (34–41)

*Notes:* Shared subscripts denote that proportions do not differ significantly at the 5 percent level (trimmed means,  $n = 1,931$ ). C.I. = confidence interval.

domains (Pandelaere et al. 2011). Further, it corroborates the recent finding of Pedersen (2017b) that unit effects can affect policy preferences.

Second, stated preferences seem to be dependent on the numerical anchor that are provided to people making up their mind. Experiment 1 found that simply providing an – existing or proposed – size of unemployment benefits draws the stated preferences closer to this proposed value, even when respondents actively reject the probity of this value. This finding is in line with the many previous studies showing robust anchoring effects across several domains (Furnham & Boo 2011). However, this finding also comes with the addendum that a very large part of this anchoring effect may be due to a demand effect. Unlike the classical anchoring studies, where the provided anchor value is clearly random, this is not necessarily the case when people are presented with numbers on existing or proposed policies. Future studies of anchoring in opinion formation may want to further investigate the degree to which this factor affects the exact nature and scope of anchoring effects in the domain of political preferences.

Third, the precision of numbers matters for opinion formation, as shown in Experiments 1 and 2. Whenever respondents are presented with a precise, rather than a rounded number, their stated preferences end up closer to that number. This finding aligns well with previous studies on the price precision effect (e.g., Loschelder et al. 2014). However, using precise numbers had no significant effect on the respondents' perception of the sender's seriousness and knowledge. This finding suggests that the effect may simply be explained as a purely numerical effect: The precise numbers may prime respondents to use a more fine-grained mental scale when thinking about the numbers, and this may explain the precision effect, as originally suggested by Janiszewski and Uy (2008).

In sum, the two experiments reported on in this study clearly showed that the presentation and framing of numbers could affect the stated preferences on the proper size of unemployment fact among Danish voters. However, one could reasonably question whether these effects should really be regarded as proper effects on policy attitudes. While the presentation and framing of numbers clearly affect the numerical responses that people provide, this could principally be regarded as a purely methodological issue for anyone using numerical answers in surveys and so on. In that sense, one might question the relevance of such numerical effects in political science.

However, it would probably be wrong to disregard the relevance of these numerical effects. First, when people state their numerical preferences on a policy issue (e.g., the size of unemployment benefits), these numerical answers to some extent reflect their basic political predisposition, as evidenced by the clear relationship between left-right position and preferences. Hence, while numerical presentations do not necessarily affect political beliefs and predispositions, they do seem to affect how such beliefs and

predispositions are translated into specific numbers. Second, and arguably more important, the relevance of stated preferences does not necessarily depend on whether these stated preferences reflect a voters' fundamental perceptions and predispositions. Public opinion research has demonstrated time and time again that it is often the case that voters' expressed attitudes are somewhat loosely connected to their basic values and predisposition (Converse 1964; Cohen 2003). In other words, voters' stated preferences on the size of unemployment benefits may be highly affected by different numerical presentations because these stated preferences are only weakly linked with basic perceptions and values, but in this regard, these numerical preferences do not differ that much from many of the other policy preferences people express.

Related to this last point, it is important to note that voters' preferences on such policy-relevant numbers can potentially turn out to have indirect or even direct effects on actual policy. First, voters are regularly polled on their preferences regarding specific numbers – for example, on the minimum wage (Scheiber & Sussmanjune 2015; Pew Research Center 2016). To the extent that political actors take their cues from such poll results, such numerical preferences may indirectly affect policy positions, and ultimately policy. Therefore, future studies may want to investigate whether such questions on the minimum wage are vulnerable to, for instance, anchoring and precisions effects. Second, voters do on occasion get to determine specific policies through, for example, ballot propositions in favor of specific tax rates or bond programs (Matusaka 2016; Braidwood 2018). Again, voters' decision making on such propositions may easily be affected by the way in which the numbers are presented. These are but a few examples of how voter preferences on numbers can matter in politics, and given the role played by numbers in modern politics, public opinion scholars are probably well advised to turn their attention to how voters make up their minds on numbers.

What then are the scope conditions of these effects? This study has shown how Danish voters' attitudes on unemployment benefits are affected in an experimental setting. Can we expect these effects to replicate in other contexts? First, one might question the degree to which these experimental effects also applies in the complex real world of politics, where voters are presented with competing messages from a host of sources. Based on the extant experiments, we cannot be sure, and future studies may want to incorporate more pieces of information in their experiments and apply methods that are stronger on external validity than survey experiments. However, it bears mentioning that real world effects of unit, anchoring and precision have been shown multiple times outside of experimental settings.

Second, one might question whether these effects among Danish voters are generalizable to other groups of voters. On this issue, however, it is

important to note that the effects are explained by general psychological mechanisms, that these effects have previously been shown to replicate in a host of different populations, and that the effects can be found across different levels of numeracy, expertise and attitudes (Furnham & Boo 2011; Låg et al. 2014). Effects may differ somewhat between different samples, but no-one seems to be immune from the effects of units, anchoring and precision – not even in politics.

Third and finally, one might question whether these effects can be found across different policy issues. A discussion about the size of unemployment benefits may lend itself more easily to the use of numbers than discussion on ostensibly non-economic political issues. However, while one might be able to come up with examples of policy issues where numbers are irrelevant, numbers are clearly not just relevant on economic issues. Even public support for war may be moved by numbers on casualties (Gartner 2008), and attitudes regarding crime and punishment may also be affected by numbers on incarceration rates and costs (Mérola & Hitt 2015). Thus, the effects of units, anchoring and precision may be numerical in nature, but so is modern politics.

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#### NOTES

1. Yamagishi (1997) argued that the unit effect could be understood as case of *anchoring*, in which the numerator in a ratio serves as an anchor, from which people adjust insufficiently when subsequently taking the denominator into account. To avoid any confusion with the more common anchoring effects introduced in the next section, I retain the term ‘unit effect’.
2. More generally, politicians using numbers may be perceived as more competent than politicians that are not using numbers (Pedersen 2017a).
3. As a test of robustness, all analyses were also done with quantile (median) regressions and robust regressions. This approach generally yielded results that were substantively similar to the analyses based on trimmed means. For details, see Online Appendix C.
4. When asked to place themselves on the left-right scale, 9 percent of the respondents replied ‘*Don’t know*’. For these respondents, left-right position was imputed from their vote choice at the last parliamentary election and intended vote at the next parliamentary election. Excluding these respondents does not change the results substantively.
5. The relationship between left-right position and the preferred size of benefits may potentially have been affected by asking these questions in immediate succession, and future studies may want to investigate whether the relationship is weakened if these questions are further apart. I thank one of the anonymous reviewers for pointing this out.
6. While one could potentially control for this particular observed pre-treatment variable, this would not solve the problem with post-treatment bias (Montgomery et al. 2018).

7. This preference for the status quo could arguably be described as *status quo bias* (Kahneman et al. 1991), but as the experiments do not directly address this, I prefer to avoid the term bias in this context.
8. Among the 396 respondents in these two conditions, just 6.8 percent ( $n = 27$ ) adjusted upward, when providing their own number on preferred rate. Excluding these respondents does not substantially alter the results.
9. Similarly, the effects are not significantly affected by respondents' level of education. This finding aligns well with previous studies showing that education is only weakly correlated with individual-level numeracy and therefore not a strong predictor of susceptibility to ratio bias and other effects of numerical framing (Reyna & Brainerd 2008; Låg et al. 2014)
10. The power calculation assumed half the effect size found in Experiment 1 (when comparing conditions three and four),  $\alpha = 0.05$  and  $\text{power} = 0.8$ . This calculation yielded a sample size of 674 respondents per group – that is, approximately 2,000 respondents in an experiment with three conditions.

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