Perceived inflation: The role of product accessibility and attitudes towards inflation

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Abstract

Little is known about the psychological mechanisms underlying judgments of perceived inflation as empirical evidence is sparse. In two studies, we investigated two factors that are expected to play a significant role in global judgments of perceived inflation: product accessibility and attitudes towards inflation. In Study 1 ($N = 253$), primed participants retrieved five products whose prices had increased (or decreased) in the past year before expressing a judgment of past inflation (versus non-primed participants with no retrieval task). In Study 2 ($N = 101$) participants were merely exposed to a series of products, and asked to estimate their frequency of purchase, before judging past inflation. In one condition, the prices of the majority of products had actually increased in the last year, while in another condition they had decreased. In both studies, attitudes towards inflation were also measured. Product priming consistently affected inflation judgments in the direction of an assimilation effect. Also, more negative attitudes towards inflation were associated with higher judgments of perceived inflation. Path analysis confirmed that both product accessibility and attitudes are potential bases for judgments of perceived inflation. These findings suggest that multiple psychological influences may underlie global judgments of perceived inflation.

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PsycINFO Classification: 2340; 3920

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1 Introduction

Understanding the mechanisms underlying perceptions of inflation is important because such perceptions can influence consumers' confidence and sentiment, even independently from official inflation (Neisingh & Stokman, 2013), and consumer sentiment influences spending (e.g., Carroll, Fuhrer, & Wilcox, 1994; Throop, 1992). Moreover, perceived inflation affects inflation expectations (Armantier, Bruine de Bruin, Topa, van der Klaauw, & Zafar, 2015; Bruine de Bruin, van der Klaauw, & Topa, 2011; Gärling & Gamble, 2008). In turn, expectations influence individual and household economic behaviour, such as wage demands, spending and investing, which impact significantly on the macro-economy (Armantier et al., 2015; Sorić, 2013).

In a comprehensive review of previous research, Ranyard, Del Missier, Bonini, Duxbury, and Summers (2008) considered several antecedents of perceptions and expectations of price changes and inflation.[1] Some of the important antecedents of the citizen's judgments of perceived inflation include memory of experiences of price changes, expectations and social amplification of price changes, official inflation measures, and attitudes towards inflation (Ranyard et al., 2008).

In the present paper, we focus on two main potential predictors of perceived inflation: product accessibility (i.e., the degree to which a product and its associated price change is accessible for retrieval in consumer's memory) and attitudes towards inflation (i.e., the consumer's attitudes towards past price changes). Each of these two potential predictors is related to a psychological mechanism that can underlie the formulation of judgments of inflation (i.e., memory sampling/recruitment and the attitude heuristic), and we deem these psychological mechanisms as not necessarily mutually exclusive.

In the next subsections we present the theoretical background of our investigation and our hypotheses, and report two empirical studies. The first investigated the effects of product accessibility via a retrieval-based priming manipulation (see also Bruine de Bruin et al., 2011). The second study employed a novel, unobtrusive, direct priming method to further scrutinize the role of product accessibility while ruling out alternative explanations based on demands effects. In both investigations we also assessed the influence of attitudes towards inflation. Owing to the correlational nature of the attitude data collected, however, the present studies aim mainly to show the existence of a significant relation between attitudes towards past inflation and judgments of inflation, compatible with attitudes underlying judgments of inflation but not excluding other potential explanations. Further studies will have the goal of fully clarifying the directionality of the attitude–inflation judgment relation, also by relying on experimental manipulations. We conclude with a general discussion of the implications of our findings, acknowledging the limitations of our research, and delineating future research directions.

1.1 Product accessibility and judgments of perceived inflation

According to sampling theories of judgment and decision making (cf. Fiedler & Juslin, 2005; Stewart, Chater, & Brown, 2006), one route to a global judgment of perceived inflation can be a process of mentally sampling products and their associated experienced price changes. Then the sample is integrated into the inflation judgment (cf. Bruine de Bruin et al., 2011; Huber, 2011; Jungermann, Brachinger, Belting, Ginsberg, & Zacharias, 2007). Alternative accounts do not postulate a fully-aware process of explicit memory sampling, but just assume that more accessible references in memory (e.g., prices, products) are more activated and thus more likely to be recruited for the judgment (e.g., Kahneman & Miller, 1986; for a review see Ranyard, Del Missier, Bonini, & Pietroni, in press).

Support for the role of memory accessibility comes from a set of studies showing that judgments of perceived inflation depend on product frequency of purchase, which is assumed to be related to the ease with which specific products and their associated past price changes are recalled. Brachinger (2008) showed, via statistical modelling, that product frequency of purchase has a (biasing) impact on inflation perception. Jungermann et al. (2007) presented converging evidence by finding that inflation judgments are related to product frequency of purchase, with more frequently bought products contributing more to the judgment. These findings were strengthened by Huber (2011) in three experiments of simulated purchases, in which frequency of products with increased prices was varied while overall expenditure increases, as well as relative price increase of individual products, were balanced. However, in all these studies on frequency of purchase, the support for the role of product accessibility was indirect, because product or price accessibility were not directly measured nor manipulated. This limits the possibility of making causal inferences, because alternative explanations cannot be excluded (e.g., effects of frequency of purchase related to product familiarity but not to product accessibility).

More direct evidence was provided by Bruine de Bruin et al. (2011). In their Study 1, participants in two of the groups were instructed to recall any price changes or to recall the largest price changes noticed over the past year. Both groups thought of various items for which price changes were perceived to have been extreme and reported more extreme inflation expectations than did a third group that had been asked to recall the average change in prices. Moreover, a relation between perceived price changes and expected inflation was detected. A second study asked participants to report their year-ahead inflation expectations, but did not require them to recall specific price changes. However, according to the authors' analysis based on retrospective reports, half of participants thought of specific prices anyway and those reported more extreme and more biased inflation expectations.

While Bruine de Bruin et al.'s studies represent a clear step forward in providing evidence for the role of product accessibility, they focused on inflation expectations rather than perceived inflation. More importantly, they relied on rather undisguised manipulations, which may elicit demands effects on subsequent judgments, and on retrospective reports, which can also be problematic (e.g., Russo, Johnson, & Stephens, 1989). Moreover, *specific* products were not primed directly. Thus, more direct evidence on the role of product accessibility on perceived inflation is needed to draw stronger conclusions about potential causal effects.

1.2 Attitudes and judgments of perceived inflation

There has been little discussion in the literature about the relationship between perceived inflation and attitudes towards it. Theoretical analysis and consideration of existing findings suggest that attitudes towards inflation are developed by experiencing price changes, but also from other sources, such as media reports of the state of the economy (cf. Ranyard et al., 2008). Then, once an attitude is formed (on attitude development see Betsch, Plessner, Schwieren, & Gütig, 2001), it can be used as an effortless heuristic attribute to express an approximate judgment of perceived inflation, as happens in several contexts and situations where attitudes play a significant role in judgment (e.g., Kahneman, Ritov, & Schkade, 1999; Pratkanis, 1988).

Social psychology studies have shown that attitudes are used to judge social objects (see Fazio, 1990, 1995; Fazio, Chen, McDonel, & Sherman, 1982; Pratkanis, 1988~~, 1989~~; see also Eagly & Chaiken, 2005) and this holds also in the consumer and decision-making domains, where attitudes or affective evaluations are used to judge alternatives (see e.g. Fazio, Powell, & Williams, 1989; Sanbonmatsu & Fazio, 1990) or risky activities (e.g., Slovic, Finucane, Peters, & MacGregor, 2007). In the economic psychology field, consumers' hold attitudes about currencies, which are related to their economic expectations (e.g., Amado et al., 2007; Kokkinaki, 1998), and there is evidence that

consumers develop subjective and affective evaluations of prices and their changes (e.g., Bates & Gabor, 1986; Bolton, Warlop, & Alba, 2003; Homburg, Hoyer, & Koschate, 2005; Rotemberg, 2005).

Taken together, these studies suggest that (1) value-charged objects can be a target of attitudes, including economic objects like products, currencies, prices and their changes; (2) attitudes towards relevant objects can be developed as a consequence of direct experience, exposure to social interaction, and communication; (3) attitudes can be used as a basis for expressing judgments, even in the consumer and economic domains. Starting from these considerations, it is possible to hypothesize that citizens' attitudes towards price changes can be used to express judgments of perceived inflation. However, this does not exclude the possibility of a reverse influence of perceived inflation on attitudes.

1.3 Hypotheses

If the formulation of a global judgment of perceived inflation either depends on a process of mentally sampling experienced prices or price changes, after which the sample is integrated to form the inflation judgment (cf. Bruine de Bruin et al., 2011; Huber, 2011; Jungermann et al., 2007), or it depends on a memory-based judgment that recruits experienced prices or price changes according to their accessibility (Kahneman & Miller, 1986), perceived inflation can be biased upwards or downwards by priming products whose prices that have recently risen, or fallen, respectively, compared to control conditions without product priming. Thus our first hypothesis is as follows:

H1 There will be a significant positive effect of product priming on judgments of perceived inflation: Priming products whose prices increased will lead to higher judgments of perceived inflation, while the opposite will happen after priming products whose prices decreased.

With respect to the role of attitudes towards inflation, as stated earlier, we hypothesize that attitudes can be used as heuristic cues to express a judgment of inflation. Thus, we predict that attitudes will have a negative relation with perceived inflation (i.e., the more negative the attitude, the higher the judgment of perceived inflation). However, our two predictors may not be independent. Indeed, attitudes to price changes may be affected by the accessibility of products (and their price changes) at the time of the judgment, considering the possibility that attitudes are partially malleable (e.g., Dasgupta & Greenwald, 2001; but for a different view see Eagly & Chaiken, 2005) or the possibility that the priming manipulation encourage strategic responding (Eagly & Chaiken, 2005). Therefore, to allow an appropriate test of the effect of attitudes on perceived inflation, it is necessary to control for the potential effect of product priming on attitude. Our second hypothesis, then, is as follows:

H2 There will be a significant negative relation between attitudes towards inflation and judgments of perceived inflation even when controlling for the effect of product priming: The more negative is the attitude towards inflation, the higher the judgment of perceived inflation will be.

Our hypotheses will be tested in two studies employing different kinds of product priming methods and with different samples.

2 Study 1: Priming by retrieval and attitudes

2.1 Method

2.1.1 Participants

Two-hundred and fifty-three (53% females) students who responded to a screening question that ~~that~~ they had lived in the UK for at least five years were recruited from two UK universities. Their mean age was 22.7 years (SD = 6.3), range 18 ~~to~~ -51 years.

2.1.2 Design and procedure

Participants were invited to participate in a study of consumer habits and behaviour at the beginning of lectures or seminars. They were randomly allocated to four conditions with type of priming as the independent variable (*increased product priming*, *decreased product priming*, *control*, and *attitude control*). In the *increased product priming* condition, participants were asked to recall and report up to five products/services whose price had increased in the last 12 months. In the *decreased product priming* condition, participants were asked to recall and report up to five products/services whose price had decreased in the last 12 months. These tasks took place in a five-minute time frame and required written responses.

Participants in the product priming conditions then expressed their judgment of perceived inflation over the last 12 months. Specifically, they were presented with the written question: "If you take into account all the products/services that consumers purchase, do you think that prices, in the last 12 months, have ..." To respond they circled a number on a bipolar response scale ranging from −9 (strongly decreased) to +9 (strongly increased). This scale was preferred to more traditional 5-point scales because it enabled a more intuitive (being explicitly bipolar), and potentially more sensitive, measurement of inflation judgments. It is important to point out that, in our procedure,

asking participants a question explicitly mentioning prices variation in the last 12 months (and asking them to think about that) is assumed to activate directly attitudes towards price changes. A similar assumption (activation of attitudes after exposure to the target object) is common in decision-making and social psychology literatures on affect and attitude activation, and has received convincing empirical support (e.g., Fazio, 2001; Fazio, Sanbonmatsu, Powell, & Kardes, 1986). Moreover, it is also important to point out that, in our procedure, the attitude activation takes places shortly before the expression of the judgment of inflation.

Finally, participants in these conditions were given a five-minute filler task unrelated to the main task (solving anagrams) to minimize carry-over effects, followed by the inflation attitude measure. To measure attitudes towards inflation, participants were asked to consider price changes in the last 12 months and to evaluate them on six bipolar response scales partly adapted from Kokkinaki (1998). These scales, ranging from −3 to +3, referred to cognitive aspects (*unreasonable-reasonable*, *excessive-limited*), evaluative aspects (*unpleasant-pleasant* and *undesirable-desirable*), and emotional aspects (*worrying-soothing*, *irritating-calming*).

The procedure for the *control* and the *attitude control* conditions was the same as above, but without the product priming task. In the latter condition, the attitude measure was administered before the perceived inflation judgment to control for potential order effects.

2.2 Results

2.2.1 Basic measures

The mean global judgment of perceived inflation was 2.07 (SD = 2.31) on the bipolar scale, indicating a general perception that prices had increased, but not strongly. This agreed with official statistics on UK inflation in the study period. To develop a measure of inflation attitude, principal components factor analysis was applied to the six items of the attitude scale. This resulted in a single factor with eigenvalues greater than one; therefore, a single score of inflation attitude was computed by taking the mean of the six items (the measure combined cognitive and affective aspects owing to similar correlations between attitude items and the high internal consistency of the compound measure: Cronbach's alpha = .84). Overall the mean inflation attitude was −0.38 (SD = 0.96) on the scale from −3 to 3, indicating a slightly negative attitude overall.

2.2.2 Effects of product priming and attitudes on perceived inflation

Given the (expected) absence of an order effect related to the administration of attitudes on inflation judgments in the two non-primed (control) conditions ($t(1, 123) = 1.38$, $p > .10$), these two conditions were combined. An independent groups analysis of variance (ANOVA) was carried out with the priming manipulation as the independent variable (conditions: increased product priming, combined control groups, decreased product priming) and perceived inflation judgment as the dependent variable. The effect of priming condition was significant ($F(2, 250) = 10.31$, $p < .001$, $\eta^2 = .076$). Games-Howell's post hoc comparisons tests showed that all pairwise mean differences were significant ($p < .05$). Means and confidence intervals are presented in Fig. 1. Therefore, H1 was supported. Moreover, consistently with H2, a significant negative correlation between attitudes towards inflation and perceived inflation judgments was observed ($r = -.43$, $df = 249$, $p < .001$).

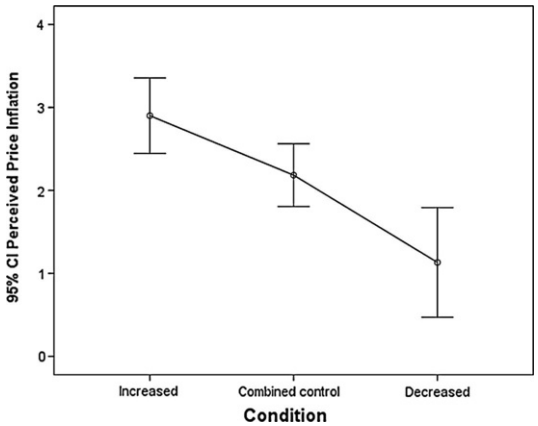

Fig. 1 Study 1: Mean perceived inflation judgments as a function of the experimental condition.

A path analysis was carried out as a joint test of our two hypotheses. The effects of product priming and participants' attitudes on judgments of inflation were estimated, while also controlling for the potential influence of priming on attitudes. Priming was operationalized as a three-level predictor variable (negative = focus on decreased products; neutral = non-primed control conditions; positive = focus on increased products), collapsing the control

and attitude control conditions into the neutral level. Considering that, in the current study, participants were asked to evaluate past inflation and their actual attitudes towards past inflation were already established, attitudes were considered as a predictor of judgments of past inflation, together with the product priming manipulation. However, in order to control for a potential effect of priming on attitudes, a link between priming and attitudes was also included in the model. Estimation was carried out with the maximum likelihood method via the Amos 22 package (Arbuckle, 2013) and the results are presented in Fig. 2.

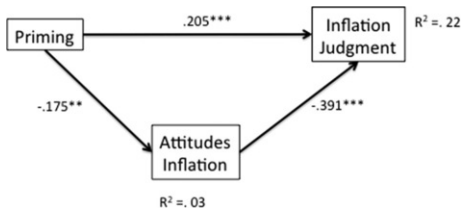

Fig. 2 Path analysis model linking priming, attitudes towards inflation and judgments of perceived inflation in Study 1. *Note.* Numbers on the arrows are standardized coefficients. Explained variance (R^2) is displayed close to the respective variable. Significance levels: ** $p < .01$; *** $p < .001$.

A direct positive effect of priming on inflation was observed (standardized effect: .205, $p < .001$), meaning that when priming turns from negative (focus on decreased products) to positive (focus on increased products), judgments of perceived inflation increase. This holds even when controlling for the rather strong negative influence of attitudes towards inflation (standardized effect: −.391, $p < .001$), with a more negative attitude being related to a higher judgment of past inflation. Together, the effects of product priming and attitudes explain 22% of the variance in the judgments of past inflation. Finally, a smaller but significant negative relation was observed between priming and attitudes (standardized effect: −.175, $p < .01$; $R^2 = .03$), indicating that priming slightly modified attitudes (i.e., a focus on increased products worsened attitudes) or, in any case, that participants were affected by the priming manipulation in the expression of the attitudes. However, a Sobel test carried out to appraise the indirect effect of priming on judgments of past inflation via attitudes detected only a small and marginally significant mediation effect (.068; $t = 1.72$, $p = .08$).

Controlling for age, sex and income in a new path model (including also a relation between age and income) showed almost unchanged coefficients: priming → inflation judgment (.202, $p < .001$), priming → attitudes (−.183, $p < .01$), attitudes → inflation judgment (−.397, $p < .001$). Moreover, no significant relations between sex and either attitudes or inflation judgments were observed, and only a marginally significant effect of income on inflation judgment was detected (−.103; $p = .08$), while age was related both to income (.180, $p < .01$) and to inflation attitudes (−.148, $p < .05$), but not significantly related to inflation judgments. Thus, the findings of Study 1 are robust even when considering socio-demographics factors.

An alternative model in which the relation between attitudes and inflation judgment was reversed (i.e., perceived inflation was used as a predictor of attitudes) showed a lower predictive power for the target construct compared to the original model ($R^2 = .19$ vs. .22 – attitudes vs. judgments of inflation), and it also explained also a much lower proportion of variance in judgments of perceived inflation (.07 vs. .22). The analysis confirmed the significance and the sign of the relations between priming and inflation judgments (.274, $p < .001$), and between inflation judgments and attitudes (−.410, $p < .001$), but not the direct relation between priming and attitudes (−.062, $p = .293$). In this model we also observed an indirect effect of priming on attitudes via judgment of perceived inflation ($t = -3.753$, $p < .001$), but we deem it as very implausible that priming may have affected attitudes via perceived inflation, giving that in our paradigm attitudes towards inflation were activated before the expression of judgments of inflation by posing the question on price changes in the last 12 months. Moreover, the model compatible with the assumptions underlying our procedure showed a higher predictive power.

2.3 Discussion

Study 1 showed that product accessibility affects judgments of perceived inflation through a retrieval priming manipulation. When products whose prices participants thought had increased were more available, judgments of perceived inflation were higher in comparison to control conditions. The reverse happened when products whose prices participants thought had decreased were more available. This showed that product accessibility affects inflation judgments, in line with our first hypothesis. The second main finding, predicted by our second hypothesis, was the observation of a negative correlation between attitudes towards inflation and judgments of perceived inflation. Finally, path analysis showed that both product priming and attitudes towards inflation contributed to the prediction of judgments of perceived inflation. This suggests that multiple cues may have been taken into account in judgments of perceived inflation.

We reported evidence that product priming can influence perceived inflation judgments. However, it can be argued that demand characteristics underlie this effect: Being asked to generate prices that have increased or decreased may have led participants to adjust their inflation judgments up or down, respectively, in order to cooperate with the researcher. In order to address this issue and to evaluate the robustness of the observed relations, Study 2

tested Hypotheses 1 and 2 using an unobtrusive priming procedure and a different sample.

3 Study 2: Priming by exposure and attitudes

The main difference between Study 1 and Study 2 was the change in the method of product priming. In Study 2, in order to eliminate demand characteristics, the priming manipulation consisted of the mere presentation of a series of products in a booklet. Participants were simply asked to state how frequently they bought them, as occurs in typical consumer surveys. No explicit reference to prices was made before the perceived inflation judgment. Given the cover story (participation on a study on consumer habits), this manipulation represents a very unobtrusive form of priming and, as a consequence, it is much less vulnerable to unwanted demand effects. Moreover, in Study 2 we directly primed specific products, unlike previous studies that relied on participants' retrieval, thus aiming to provide stronger evidence for a causal role of product priming.

3.1 Method

3.1.1 Participants

One hundred and one students (64% females), who responded to a screening question that ~~that~~ they had lived in the UK for at least five years, were recruited from the campus of a UK university. Their mean age was 26.0 years (SD = 9.0) ranging from 18 to 49 years.

3.1.2 Design and procedure

Participants were randomly allocated to two conditions with type of priming as the independent variable. They were presented with a questionnaire described as a survey of consumer habits. In *the increased product priming* condition, participants ($N = 50$) were asked to rate their frequency of purchase of six products, four of which had increased price changes in the last 12 months, while the prices of the other two remained approximately stable. In the *decreased product priming* condition, the participants ($N = 51$) were also asked to rate their frequency of purchase of six products. However, in this case the prices of four products had decreased in price in the previous year, while the prices of the other two remained approximately stable. The changes in price over the previous 12 months of the products presented are shown in Table 1.

Table 1 Study 2: The products used for the priming manipulation with percentage price changes in the previous 12 months (in parentheses).
Source: Office for National Statistics (2006). Focus on Consumer Price Indices: August 2006. London: Office for National Statistics

Increased prices	Stable prices	Decreased prices
Potatoes (+4.9)		Flight tickets (−9.2)
Cigarettes (+5.5)	Butter (+1.0)	Audio visual (−10.4)
Fresh fish (+9.8)	Pork (+1.1)	Poultry (−2.6)
Beer (+2.8)		CDs & tapes (−1.8)

After the priming manipulation, participants were asked for a global judgment of perceived inflation as in Study 1. Then followed the filler task, after which attitudes towards inflation were measured as before. Finally, to check the effectiveness of the priming manipulation, after another filler task (a second set of anagrams), participants were asked to provide a price change judgment of the four different products that were not common (i.e., with increased versus decreased prices). Judgments were asked on a bipolar 7-point scale ranging from strongly decreased to strongly increased. A one-way ANOVA showed a significant difference between the two groups in the predicted direction (higher judgments in the *increased product priming* group), indicating that the manipulation had been successful ($F(1, 99) = 8.53$, $p < .01$, $\eta^2 = .08$).

3.2 Results

3.2.1 Effects of product priming and attitudes on perceived inflation

The overall mean level of perceived inflation was similar to that observed in Study 1 (2.92, SD = 2.36), as was the mean level of inflation attitude (−0.80, SD = 1.09). To test H1, an independent group ANOVA was carried out with the priming manipulation as the independent variable (conditions: increased product priming, decreased product priming) and perceived inflation judgment as the dependent variable. Consistent with H1, mean perceived inflation

in the increased product priming condition (3.61, SD = 2.22) was higher than that in the decreased product priming condition (2.27, SD = 2.39). The ANOVA showed that the difference between these means was significant ($F(1, 99) = 8.53$, $p < .01$, $\eta^2 = .08$), thus supporting H1. Finally, a significant negative correlation between perceived price inflation and inflation attitude was observed ($r = -.42$, $p < .001$), in agreement with H2.

A path analysis was carried out as a joint test of H1 and H2 while controlling for the potential influence of priming on attitudes. Priming was operationalized as a two-level predictor variable (negative = exposure to decreased products, positive = exposure to increased products). As in Study 1, priming and attitudes were considered as predictors of inflation judgments, and a direct link between priming and attitudes was included in the model. The model was estimated as in Study 1 and the results are presented in Fig. 3.

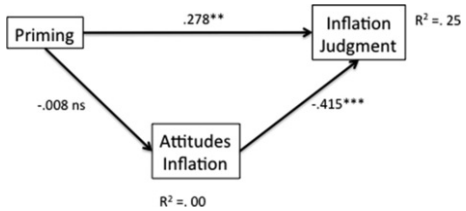

Fig. 3 Path analysis model linking priming, attitudes towards inflation, and judgments of perceived inflation in Study 2. Note. Numbers on the arrows are standardized coefficients. Explained variance (R^2) is displayed close to the respective variable. Significance levels are: ns $p > .10$; ** $p < .01$; *** $p < .001$.

A direct positive effect of priming on perceived inflation was observed (standardized effect: .278, $p < .01$), meaning that when priming turns from negative (focus on decreased products) to positive (focus on increased products), judgments of past inflation increase. As in Study 1, the results show that the influence of priming holds even when controlling for the negative influence of attitudes towards inflation (standardized effect: −.415, $p < .001$). Together, the effects of product priming and attitudes explain 25% of the variance in the judgments of perceived inflation. Finally, no significant relation was observed between priming and attitudes (standardized effect: −.008, $p = .93$) indicating that priming did not significantly modify attitudes or affected their expression. We controlled for the potential influence of age, sex, and income by including these influences in a new model (together with a relation between age and income). The findings showed almost unchanged coefficients: priming → inflation judgment (.272, $p < .01$), priming → attitudes (−.009, $p > .10$), attitudes → inflation judgment (−.418, $p < .001$). There were no significant relations between sex or income and either attitudes or inflation judgments, while age was related only to inflation judgments (−.258, $p < .01$). We also carried out a multiple regression analysis on judgments of perceived inflation including as predictors the priming condition, the compound attitude measure, and the mean self-reported frequency of purchase of products used as priming stimuli. The effects of priming ($\beta = .280$, $p < .01$) and attitudes ($\beta = -.400$, $p < .001$) were again significant, but not the effect of self-reported frequency of purchase ($\beta = .082$, ns), suggesting that the effect of product priming was independent from potential influences of frequency of purchase of primed products in our study.

Also in Study 2 we estimated an alternative model in which the relation between attitudes and inflation judgment was reversed. As happened in Study 1, the model showed a lower predictive power for the target construct ($R^2 = .19$ vs. 25 – attitudes vs. judgments of inflation) and explained a much lower proportion of variance in judgments of perceived inflation (.08 vs. .25). The analysis confirmed the significance and the sign of the relations between priming and inflation judgments (.282, $p < .01$), and between inflation judgments and attitudes (−.451, $p < .001$), but not the relation between priming and attitudes (.119, $p = .209$). As in Study 1, we observed an indirect effect of priming on attitudes via judgment of perceived inflation ($t = -2.502$, $p < .05$), which seems however hard to reconcile with the direction of effects implied by our procedure. In addition, as in Study 1, the model compatible with the assumptions underlying our procedure showed a higher predictive power.

4 General discussion

4.1 Summary of the findings in relation to research goals

The studies presented in this paper investigated the role of two factors expected to play a role in judgments of perceived inflation, in the light of psychological theories of inflation and price changes (Bruine de Bruin et al., 2011; Huber, 2011; Jungermann et al., 2007; Ranyard et al., 2008) and of attitude-based judgments (e.g., Pratkanis, 1988; Sanbonmatsu & Fazio, 1990).

Study 1 showed that making subsets of products more accessible via a retrieval-based priming manipulation affected global judgments of perceived inflation in a way consistent with their associated price change, and that attitudes towards inflation were negatively related to judgments of perceived inflation. Path analysis results were consistent with the existence of multiple-cue judgmental processes in this economic context, given that both the influences of priming and attitudes were apparent. Study 2 fully replicated these findings by employing an unobtrusive form of priming, consisting of the simple presentation of products whose frequency of purchase had to be reported. In both studies, priming and attitudes jointly explained a sizable proportion of variance in judgments of past inflation (22% and 25%) and the influence of attitudes was greater than the influence of priming. It is worth noting

that the results were very similar in the two studies in spite of the differences in the kind of priming manipulation and in the sample, thus addressing via converging evidence the issue of replication in psychological research (e.g., Klein et al., 2014).

4.2 Theoretical and applied implications

Several scholars have tried to reconcile the postulated economic rationality of decision makers and the psychological anomalies in perceived and expected inflation within a bounded rationality perspective (see e.g., Armantier, Nelson, Topa, van der Klaauw, & Zafar, in press; Brachinger ~~et al.~~, 2008; Ranyard et al., 2008). However, these theories have been rather vague or even silent with respect to the specific mechanisms people use to appraise inflation. Our studies addressed directly this issue.

Our priming findings support the idea that one of the mechanisms underlying judgments of perceived inflation is a process of memory sampling or accessibility-based recruitment, in which the more accessible products are more likely to be recruited and thus to affect the judgment. This perspective can also explain the findings according to which more frequently bought products assume disproportionally more weight in judgments of inflation (Brachinger, 2008; Huber, 2011; Jungermann et al., 2007) as well as products associated with more salient and distinctive price changes (Bates & Gabor, 1986; Brachinger, 2008; Bruine de Bruin et al., 2011). Moreover, this perspective is compatible with a class of sampling models that can explain a series of different phenomena within the judgment and decision-making contexts (Fiedler & Juslin, 2005; Stewart et al., 2006) or with more general theories that share the idea of memory recruitment (Kahneman & Miller, 1986). It is also worth noting that the influence of priming in our studies is consistent with an assimilation interpretation (Herr, Sherman, & Fazio, 1983): focusing on products whose prices increased leads to a higher judgment of past inflation and the reverse happens with a focus on products with decreased prices.

Our findings also showed that attitude towards inflation is a significant predictor of perceived inflation, thus confirming the important role of attitudes in social and economic judgments and decisions (Pratkanis, 1988; Rotemberg, 2005; Sanbonmatsu & Fazio, 1990), but highlighting their specific role in judgments of inflation. Albeit based on correlational data and thus open to alternative interpretations, these results are consistent with the view that attitudes can be used heuristically to provide a judgment of perceived inflation, even in addition to the influence of product recruitment. Such an attitude heuristic may allow a very fast judgment of perceived inflation and it can be grounded in the evaluative consequences of repeated experiences with price changes as well in interpersonal and media communication and amplification. Interestingly, our findings showed that attitudes are affected little (Study 1) or unaffected (Study 2) by product priming manipulations, which indicates their robustness, in line with traditional social psychology literature (e.g., Eagly & Chaiken, 2005).

Finally, given that the results of both studies showed that multiple sources of information (i.e., products and attitudes) are used in formulating judgments of perceived inflation, we have provided the first evidence for the existence of multiple-cue judgmental processes in this specific economic context. In particular, we showed that multiple sources of information may contribute to *single* global judgments of perceived inflation, progressing beyond studies which showed that different sources of information can contribute, in different circumstances, to the formulation of global judgments of perceived inflation (Ranyard et al., 2008). Multiple cue models and approaches have been proposed in different judgment contexts (e.g., Juslin, Carlson & Olsson, 2008, 2003), and thus it is reasonable that they can be applied also in the domain of inflation judgments. Unfortunately, our findings do not allow going deeper into the mechanisms of combination of different sources of information in judgments of perceived inflation and therefore further studies on this topic are needed. Indeed, a judgment may have been initially based on the attitude towards inflation and then adjusted after memory sampling, but also the reverse may have happened, and other potential sources of information, not measured in our investigation, may have contributed further to the final judgment.

Our investigation has applied as well as theoretical implications. In particular, our priming results suggest that making a consumer think of (or perceive) a given product may induce a bias in inflation judgments if the primed product is associated with a price change that diverges sharply from the consumers' experienced price changes (see also Bruine de Bruin et al., 2011). This may have implications for perceived inflation measurement, which may be incidentally affected by questions on specific products or by unfortunate wording. Furthermore, it may also suggest a subtle (and unfair) way to influence consumers' and citizens' price change judgments via making reference to specific products and making consumers focus on the presented evidence (e.g., Del Missier, Ferrante, & Costantini, 2007).

4.3 Limitations and future research directions

Although our studies provided robust results, there are some limitations that should be acknowledged. First, although we considered the two potential predictors of perceived inflation judgments more relevant in the light of behavioural and social decision research, future investigations may need to consider other predictors. Second, it would be worth extending the analysis to judgments of inflation expectations, given their applied relevance. Third, future studies should examine the robustness of our findings to methodological variations, such as variation in the priming method, response scale, or sample composition. However, in this respect it is encouraging that our findings were robust across two different experiments and consistent with previous studies that employed different methods and scales (e.g., Brachinger, 2008; Bruine de Bruin et al., 2011; Huber, 20~~0~~11; Jungermann et al., 2007). Finally, caution should be exerted in the interpretation of part of the results, given that the attitude findings are derived from correlational data, even if we were guided by existing theories. In particular, future studies should have the goal to fully clarify the directionality of the strong relation we observed between attitudes towards inflation and judgments of inflation. For what concerns the present study, the findings seem compatible with attitudes towards past prices underlying judgments of inflation, even if alternative interpretations are still open. It is also worth noting that attitude towards inflation proved to be a stable construct in our studies, relatively robust to priming manipulations, and this

suggests that it will be very difficult to design experimental manipulations capable of strongly affecting attitudes. We deem this as an additional motivation for including attitudes towards inflation as a measured variable in the present research.

In conclusion, our investigation showed that both product priming and attitudes towards inflation matter for judgments of perceived inflation, thus corroborating sampling/recruiting-based and attitude-based accounts. Moreover, multiple sources of information seem to be considered at the same time by the individual when formulating a judgment of perceived inflation.

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Footnotes

1 In line with the psychological and economic literature on inflation, in the present paper we refer to perceived inflation as a global judgment of price changes (even if it is possible to investigate the perception of price changes of single products). Moreover, we refer to inflation perception to indicate retrospective judgments of inflation and to inflation expectation to indicate expected future price changes.

Highlights

- We investigated factors underlying judgments of perceived inflation.
- Participants retrieved or were exposed to prices that had increased or decreased.
- Such priming affected inflation judgment in the direction of an assimilation effect.
- Also, attitude to inflation was inversely related to perceived inflation.
- Multiple influences on judgments of perceived inflation are active at the same time.

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