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Enhancing satisfaction with public services: The effect of recalling personal experiences

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ABSTRACT

This article contributes to the study of the determinants of satisfaction with public services and the application of the expectation-disconfirmation model to public services. This is relevant for a better understanding of the mental processes that determine public service satisfaction and the role that personal experiences play in this. The study is based on a survey experiment on public healthcare provision in Catalonia, where citizens were primed to describe positive and negative experiences. The results show that when there is high personal involvement in the form of an affective reaction there is a positive effect on satisfaction. This effect is stronger among those individuals who demand more from pubic organizations, give lower ratings to public services, and are less willing to change their judgements considering the particular social and economic context. Priming citizens into recalling their positive encounters with public services is an interesting way to battle the anti-public sector bias in the provision of public services through an ethically acceptable intervention.

Introduction

One of the main factors influencing satisfaction with public services is performance, an issue that is frequently debated among citizens, scholars, politicians, and the media. The prevailing assumption is that public organizations are less efficient, flexible, and effective than private organizations (Rainey and Bozeman 2000). Public organizations are often thought to perform less effectively than private organizations (Marvel 2015; Hvidman 2019). Such negative perceptions of the public sector tend to be sticky and difficult to change. Citizens rarely reconsider their attitudes, even when they receive positive information about public service performance (Marvel 2015).

Research studying the determinants of satisfaction with public services predominantly uses the expectation-disconfirmation model (EDM). Initially used to analyze consumer satisfaction with private services (Oliver, 1980:2010) it was extended to public services by Van Ryzin (2013) and James (2011). A recent meta-evaluation indicates that EDM should continue to be applied to understand how citizens attribute changes in expectations, perceptions of performance, and satisfaction to managerial and environmental changes (Zhang et al. 2022). For this, it is necessary to study citizens' experience and satisfaction with individual services, particularly human services (Zhang et al. 2022).

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The conceptualization of the satisfaction process is based on a mental process (Wirtz and Mattila 2001). It has meaning in the context of an evaluation that implicitly requires some standard. A major weakness of the disconfirmation-of-expectations variable in the EDM has been, according to the private consumer literature, that perceived performance has a strong evaluative component capturing part of the satisfaction construct (Wirtz and Mattila 2001). We aim to contribute to the study of the determinants of satisfaction with public services and the application of the EDM model developing two theoretical aspects. First, we use antecedents as other standards (Oliver 2010), in addition to the disconfirmation-of-expectations variable, and test whether they imply differences in the mental processes leading to judge satisfaction. Second, we do so by introducing citizens' memories of personal positive and negative experiences with public services. This is reasonable when citizens have concrete experience with public services and their performance because they use them frequently. For this reason, they are more likely to think about them in concrete rather than abstract terms (Cadotte et al. 1987) and they may be knowledgeable of the limits of the performance that a specific public service in their area may have due to economic or other restraining conditions. By introducing personal experiences in the form of memories and recalling whether they were good or bad experiences, citizens activate other standards for comparison, emotionally based, that remind them of aspects of the service that, otherwise, they might not even be aware of. This is relevant to reach a better understanding of the mental processes that determine satisfaction with public services, addressing more fully the role played by emotions in the application of EDM to public services through the incorporation of cognitive feelings based on ease-of-retreat of personal experiences (Greifeneder et al. 2011).

In tackling these questions, the present article also addresses research avenues recently proposed by the public services literature. For example, Marvel (2015) recommends focusing on contexts in which citizens view public performance in a relatively positive light. The meta-analysis by Zhang et al. (2022) suggests focusing on particular public services and Hjortskov (2019) emphasizes the need to determine whether public service satisfaction has an emotional component.

This type of research is important theoretically and practically. The general tendency of citizens to view services provided by public organizations in a more negative light can be ameliorated if managers of public services invite citizens to recall their own experiences and put their judgments in a wider perspective. Their consideration of previous encounters and the activation of their connections with public service providers may be a critical element to consider when measuring citizen satisfaction beyond the immediate perceived performance of a service. This type of information can change citizens' attitudes toward public service performance. The use of previous personal experiences and feelings as informational treatments is relatively frequent (see e.g., Greifeneder et al. 2011) and, although ethical issues may be at stake, we would argue that this type of intervention is not necessarily undesirable.

This study is based on a large-scale experiment (1.500 respondents) in the Spanish region of Catalonia, focusing on citizens' satisfaction with public healthcare provisions. Our experiment led to a case of imperfect compliance, addressed here using instrumental variables and thus rendered more interesting for public administration research. In the Catalan context, public health services are, *a priori*, valued highly by citizens (*Health Barometer* 2018). This domain is one in which most citizens have personal direct experiences to draw on, making it possible to test whether personal experiences combined with perceived performance impact satisfaction.

Theoretical framework

Public organizations tend to have a poor image, which is difficult to change (Rainey and Bozeman 2000; Marvel 2015). This is a problem that occurs independently of organizational performance. Even in Europe's Nordic countries, where public-sector organizations tend to be more flexible and well-regarded, citizens tend to believe that private organizations are more efficient

(Hvidman 2019). The depiction of the public sector as inferior, inefficient, or less effective, if not wasteful, has negative implications, leading to deeply ingrained and widely shared negative views (Berman 1997). It also has a direct impact on citizens' assessments of public-sector performance, adding layers of difficulty for public-sector managers trying to increase their budgets and recruit talented people (Garrett et al. 2006; Hvidman 2019).

From a practical point of view, can public managers change this negative view of the public sector? Can they enhance public perceptions of public services? To date, the answers provided by the literature are rather pessimistic, mainly because cultural beliefs, stereotypes, and unconscious biases are sticky or difficult to change and, therefore, likely to persist (Marvel 2015). In addition, the literature on motivated reasoning suggests that individuals tend to discount new information that is inconsistent with their preexisting beliefs, focusing instead on information that confirms their existing opinions (Kunda 1990).

In line with these propositions, experimental research has shown that government messages, including those disseminated through advertising, have a limited impact on public performance evaluations (James 2011; Van Ryzin 2013; Marvel 2015; Andersen and Hjortskov 2016; Hernández and Pannico 2020). The literature also shows that people are less likely to trust positive performance information that originates from a public agency (James and Van Ryzin 2015). However, recent evidence suggests that credible information about the positive performance of public services can reduce the bias against public organizations, at least in the short term (Marvel 2015).

Closely connected with this more practical concern is the theoretical discussion on the determinants of satisfaction with services. Interestingly, both private and public sector streams of research answer this question by applying experimental research based on the EDM.

The EDM: Expectations, performance, and satisfaction

The EDM was adapted to the study of local public services by Van Ryzin (2006) and James (2011). Their research extended a model that was originally developed to explain customer satisfaction with private goods and services (Oliver 1980). Figure 1 presents Oliver's graphic representation of the EDM.

The EDM model is intuitively appealing and parsimonious. Relationships A, B, C, and D represent the expectancy disconfirmation process, the E link indicates a direct effect of performance on satisfaction and the F link indicates a direct effect of expectations on satisfaction. Expectations are defined as an anticipation of the performance of the service, which derives from prior experiences or other sources of information such as word of mouth, messages from public providers, the media, or public auditors (Heinrich 2003, James 2011). Performance is mostly a subjective measure of performance, or, in other words, the citizens' rating of the service (Van Ryzin 2006), which, depending on the complexity and tangibility of the services, may be

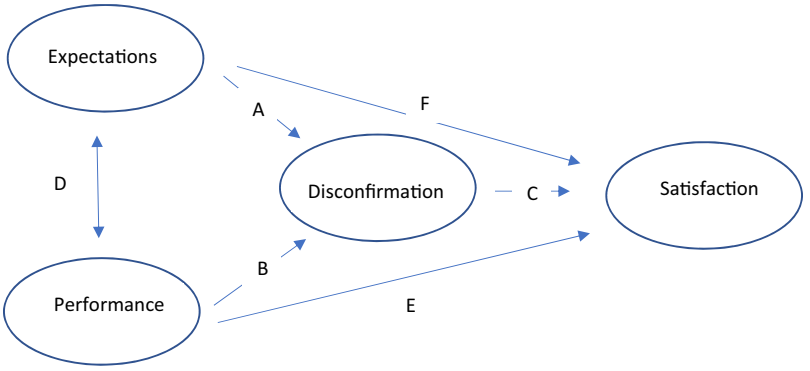

Figure 1. The EDM representation.

related to more objective measures of performance. Disconfirmation is the discrepancy between the anticipated performance of the service and the evaluation of the quality (performance) received (Oliver 1980; Van Ryzin 2006). Satisfaction is the overall judgment of the service, normally expressed in terms of how happy citizens are with the service they receive.

The private consumer literature has discussed the so-called "direct link" from perceived performance to satisfaction (E) together with the effects of disconfirmation (C) and expectations (F) on satisfaction. The discussion on the direct link between perceived performance to satisfaction raised some doubts about the appropriateness of disconfirmation of expectations as a mediating variable. The potential high correlation between perceived performance and satisfaction was explained by the type of measures used and the insufficient capturing of the mental process leading to satisfaction. Cadotte et al. (1987) indicated their concern about the use of anchor words in performance measures that imply evaluation and used the term "subjective" performance measures to refer to "value-laden" performance measures compared to more objective measures. On the other hand, satisfaction is an evaluative response based on a psychological comparison, and since performance can only have meaning in the context of evaluation and some comparison standards, perceived performance measures may capture part of the satisfaction construct.

The public services literature has built on the basic logic of the EDM to understand the determinants of satisfaction and test the assumptions of the model. What do we know? The findings of this literature strand show that, while messaging about local government performance does influence citizen expectations, information about poor performance has a far more significant effect than information about good performance (James 2011, Van Ryzin 2013). The study by Van Ryzin (2013) primed participants to form high and low expectations of their city government and this had a significant effect on expectations, which translated into a small effect of expectations on satisfaction. Other researchers replicated this study (Grimmelikhuijsen and Porumbescu 2017) and found a stronger effect of expectations on satisfaction.

More recent studies also centered on expectations and satisfaction. Andersen and Hjortskov (2016) presented the results of two experiments. In the first one, one group of participants was told that the local government needed to cut future spending on schools, while another group was told that there would be no cuts. Both statements harmed citizen satisfaction. In the second experiment, they primed parents by asking them about excellent performance at their children's schools which increased their levels of satisfaction, although the likelihood of being satisfied decreased when they were asked to write about those instances.

Finally, Hvidman (2019) focused on perceptions of public performance and found that citizens considered public organizations less effective and more burdened, but more equitable. In another study, Hjortskov (2020) developed a more dynamic vision investigating how prior expectations, perceived performance, and prior satisfaction drove current expectations. The conclusions are relevant because they show that in the EDM, satisfaction depends on expectations, but it is not a simple measure of performance. According to Hjortskov (2020), performance assessment is a rational process, but the process of judging satisfaction is more complex as it is influenced by affective considerations.

Hypothesis development

We depart from the findings of the two literature streams based on private consumer and public administration services to build our hypothesis. As suggested by the consumer literature, the EDM does not need to discard the mediating variable disconfirmation-of-expectations but can introduce other comparison standards in addition to the disconfirmation-of-expectations. Several studies have established that consumers entertain multiple standards and that their inclusion may improve the ability to predict satisfaction through such models (i.e. Oliver, 2010).

Expectations are a rather stable standard, vary across citizens, and contain normative values and beliefs about how public services should perform (Hjortskov 2019). Political attitudes and

the norms and values associated with them should, therefore, influence them. Specifically, the literature distinguishes between normative and positive expectations. Positive expectations are predictions of how citizens think the service will be in the future whereas normative expectations are norms and values about how citizens think that services ought to be. According to Favero and Kim (2021), normative expectations are more important. They are firmly held beliefs, and citizens are less willing to alter them as normative benchmarks of acceptable levels of public service which makes them harder to change through manipulation. However, research has shown that citizens interpret the word "expectations" in different ways, some interpret it more as a prediction and some interpret it as something more normative (Hjortskov 2020).

Since the disconfirmation-of-expectations variable can be based on either a normative or a predictive interpretation, in this study the expectations question appeals to the beliefs citizens have concerning the relevance of having good quality public services, whereas information about personal memories is introduced to lead citizens to take into account their positive experiences along the lines of what Andersen and Hjortskov (2016) did with primary school services. Citizens may have an abstract idea of what a particular public service should provide but they also have concrete experiences with some public services and their past performance. These experience-based norms are at the same time constrained by the judgment about the performance citizens believe is possible in a particular social and economic context introducing citizen's equity considerations concerning public services.

A related strand in the psychological literature argues that judgements are formed not only based on content information but also based on feelings, such as having positive and negative memories or experiencing ease or difficulty when recalling some piece of information (Storbeck and Clore, 2007). The impact of feelings on judgments is thus posited to be indirect and mediated by the activation of content information. More specifically, cognitive feelings of ease-of-retrieval are used as a source of information other than solely relying on content information when forming judgments (Greifeneder et al. 2011)

Therefore, in addition to the disconfirmation-of-expectations variable, we believe that emotional aspects can make a difference in the mental process of judging satisfaction. When forming beliefs about satisfaction, citizens will tend to assimilate it to their expectations to avoid a mismatch with their feelings and to preserve the coherence of their views. However, the relationship could be altered, not only by the memory of a personal experience but by a high emotional involvement, exaggerating the difference between expectations and perceived performance, adding either to a positive or negative disconfirmation effect (Andersen and Hjortskov, 2016).

Instead of merely providing information through messaging, as in most prior studies, our experimental strategy focuses on prompting the recall of previous encounters. That is, citizens are asked to build on their own experiences by thinking about an encounter. Specifically, we randomly ask half of the sample to remember encounters they particularly appreciated, and the other half encounters they particularly disliked to activate positive or negative emotions.

By manipulating participants' recall of prior encounters, we expect that their satisfaction judgments will be altered. If our assumptions are verified, we could argue that emotional cues add to the effect of the disconfirmation-of-expectations variable in the EDM.

Therefore:

> H1. Recalling personal experiences of prior encounters will affect public service satisfaction.
> H2. Recalling personal experiences of prior good encounters will have a positive effect on public service satisfaction.

Our initial question was about a more practical question that is closely connected to the EDM and the determinants of public service satisfaction. The concern was about the poor image of public organizations and how can public managers change the negative views of citizens. Adding memories and emotional cues to the EDM may be relevant to answering those concerns.

If our hypotheses are confirmed, public managers could remind clients of public services and their previous positive encounters to influence their satisfaction judgments.

As with many other behavioral aspects analyzed within the public administration literature, however, we might expect that recalling previous encounters will have different effects on individuals based on their personalities. Simon (1947, 1982) argued that individuals' behavior is the result of several cognitive mechanisms by which individuals make sense of their environment before deciding to display a specific behavior. Simon's work was pioneered in introducing the idea of bounded rationality; discouraging the conceptualization that individuals' behavior was a simple result of analyzing their environment in a perfectly rational vein. Following his approach, scholars started to focus on unpacking the cognitive mechanisms that could explain why, within the same situation, some individuals behaved differently. As a consequence, several researchers presented studies linking particular personal characteristics with specific behaviors. Following this line of research, Ajzen and Fishbein presented the Theory of Reasoned Action to explain the internal mechanisms affecting individuals' behavior (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975). These authors argue that an individual's behavior is the result of the interaction between onés attitude toward performing the behavior and one's subjective norm related to performing the behavior. More specifically, individuals undertake cognitive processes before any action, by which they order their personal values, attitudes, and subjective norms. Azjen developed this theory further into what he called the Theory of Planned Behavior. Among the many applications of these theories, it is of particular interest to consider how values, attitudes, and other personal characteristics combine to explain human action. Other studies have tested hierarchical models to observe how personality traits are the most stable characteristics of an individual, followed by values, which in turn affect attitudes and finally these influence behaviors. Hence, individuals who, because of their value system, political ideology, or personal characteristics expect more from the public provision of goods and services, give lower ratings to public services and are less willing to change their judgements considering the particular social and economic context, will tend to have a negative disconfirmation and a lower level of satisfaction. In these cases, recalling positive personal experiences and adding emotional cues helps to counterbalance the initial dissatisfaction. Since their satisfaction level is already low, any positive input has more 'room' to create a noticeable improvement.

Consequently,

> H3. The effect of recalling personal experiences of prior good encounters on public-service satisfaction will be stronger among individuals with negative disconfirmation.

Data and methods

To examine these hypotheses, we administered an online survey to 1,511 Catalan respondents. We commissioned Netquest, a commercial firm, to administer the survey. Catalan respondents over 18 were selected from the Netquest panel through quota sampling, using representative quotas for gender, age, and level of education.[1] Table A1 in the appendix summarizes the participants' demographic characteristics.

Respondents were randomly assigned, with equal probability, to a positive or negative prime condition. In the positive prime condition, respondents were asked to describe a time when they felt they were treated well. Specifically, respondents were asked to briefly describe a situation in which a family doctor, public health-service specialist, or public hospital treated them well. In the negative prime condition, they were asked to describe a time when they felt they were treated badly. Specifically, respondents were asked to briefly describe a situation in which a family doctor, public health-service specialist, or public hospital did not treat them well. In both cases, respondents were forced to write an open-ended response ranging between 20 and 400 characters before proceeding further in the survey. The average number of characters written by respondents was 69 characters in the positive prime condition and 79 characters in the

negative prime condition. Overall, 762 respondents were assigned to the negative prime condition, while 750 were assigned to the positive condition. It is important to note here, that we do not have a *pure* control group, where respondents are not asked to recall an experience. Hence, our treatment can be better conceived as a valence treatment (positive vs. negative experience) rather than as a treatment of experience recall (recall vs. no recall). Figure B1 in the appendix summarizes the balance-test results for the treatment groups in key covariates, showing that all covariates were balanced.

Next, we measured our main outcome of interest. The respondents were asked to rate their levels of satisfaction with public-health services, using a 7-point scale; responses ranged from 1 (very dissatisfied) to 7 (very satisfied).[2]

We also included a manipulation check, asking respondents whether their experiences with public health services were positive or negative.[3] Specifically, the manipulation check asked, through a close-ended question, if the experience the respondents had just written about in the open-ended probe was a positive or negative encounter with a doctor.

Most respondents assigned to the positive prime condition (94.1%) confirmed that they had written about a positive experience. Of those assigned to the negative prime condition, however, a larger share of participants (75.1) claimed to have written about a positive experience. Thus, the experiment was subject to "imperfect compliance," which resembled a two-sided noncompliance situation (Angrist and Pischke 2009). Table 1 summarizes these figures in detail by cross-tabulating the prime condition respondents were assigned to and their responses to the manipulation check.

While the manipulation check provides us with respondents' judgment of the response they provided, one could have some doubts about the robustness of the manipulation check due to the self-reported nature of the data. Therefore, we have conducted a detailed analysis of the responses provided by the participants to the prime task, which we have coded as positive, negative, or neutral. This analysis reveals that according to our coding, 33% of reported experiences were negative, 56% positive and 11% neutral. What is most relevant for our purposes, though, is if the manipulation check is correctly capturing the type of response provided by the responses. Table 2 cross-tabulates respondents' answers to the manipulation check and our assessment of the tone of their responses to the open-ended question. These results reveal that 83% of those who claim to have reported a negative experience in the manipulation check do write a response that we consider negative, while 65% of those who claim to have reported a positive experience in the manipulation check wrote a response that we consider positive. Hence, we consider that the manipulation check (which does not include a neutral category, as our more detailed hand-coding does) works relatively well.[4]

Table 1. Cross-tabulation experimental prime assignment and responses to the manipulation check (observations and column percentages in parentheses).

	Experimental condition	
Manipulation check (reported experience	Negative prime	Positive prime
Treated well	572 (75.07)	706 (94.13)
Treated wrongly	190 (24.93)	44 (5.87)

Table 2. Cross-tabulation responses to the manipulation check and hand-coded tone of responses provided in open-ended response (observations and column percentages in parentheses).

	Manipulation check (reported experience)	
Hand-coded tone of open-ended response	Treated well	Treated wrongly
Positive	832 (65.10)	20 (8.55)
Negative	305 (23.87)	194 (82.91)
Neutral	141 (11.03)	20 (8.55)

The results obtained through the analyses of this manipulation check could be biased due to the wording of the manipulation check question, which was more restrictive than the wording of the open-ended probe task. Specifically, while the open-ended probe task asked respondents to describe a "situation in which a family doctor, public health service specialist, or public hospital" treated them well or not, the manipulation check only asked respondents how "doctors" treated them in the situation they described. Hence, those reporting in the manipulation check that they had a positive experience, may have provided an answer about a negative experience but this could refer to the health system in general and not to doctors. This may lead to a failure to capture those who provided a negative or positive response in the prime task through the manipulation check. A qualitative analysis of the responses that participants provided in the open-ended probe alongside their responses to the manipulation check suggests that this is not a serious issue. Respondents who claim to write a negative or positive experience in the manipulation check write about experiences that are not only restricted to doctors but the health system in general. We would speculate that this is because doctors are the prime exponent of the functioning of the health system, and even if the manipulation check question does not explicitly mention the health system as a whole, respondents take this as a shortcut to think about the health system as a whole.[5]

According to a detailed analysis of the prime-task responses, many respondents claimed to have had no bad experiences with the public health system. Imperfect compliance is not uncommon in social science experiments (see e.g., Albertson and Lawrence 2009; Hvidman 2019). In this scenario, however, a simple comparison between respondents assigned to positive and negative prime conditions can be misleading. Faced with similar situations, some studies have chosen to exclude respondents who failed to pass post-treatment manipulation checks, estimating the effects among compliers or "passers" only (see e.g., Turner 2007). However, excluding respondents who fail to pass a manipulation check can compromise the randomization and representativeness of the sample and generate post-treatment bias (Aronow et al. 2019; Berinsky et al. 2014; Montgomery et al. 2018). To estimate the impact of positive experiences on health-service performance evaluation, the present study has therefore used an instrumental variables (IV) estimation.

Instrumental variables can recover the unbiased effect of a treatment or experimental manipulation with imperfect compliance (Huntington-Klein 2021). In a recent study of citizens' public services evaluations, Hvidman (2019) uses this approach to estimate the impact of an experimental manipulation with a significant number of non-compliers.

In accordance with the basic logic of IVs, the random assignment of respondents to the positive cue condition is used as an instrument (Z) for a personal experience of good health-service performance (our treatment X); the variation in X induced by Z is then used to estimate the impact of positive experiences on public-service satisfaction Y. Note that, while variation in X (a reported positive or negative experience, captured through the manipulation check) may not be random, we use the part of the variation in X that is generated by assignment to one of the two experimental conditions Z. Given this random assignment, the variation cannot be systematically related to any potential confounder, ensuring that our analysis satisfies the exclusion restriction by design (Huntington-Klein 2021).

A two-stage least squares (2SLS) method is used to estimate the IV models, based on the sequential use of two regressions for the estimation (Huntington-Klein 2021). The first stage regresses the remembered positive experience (treatment X, measured through the manipulation check) on random assignment to the positive or negative prime conditions (instrument Z) and other control variables. From this first stage, we take the predicted (explained) values of X and use them to predict health-service satisfaction (the outcome of interest Y) through a second-stage regression, which incorporates the same control variables as the first-stage regression. In other words, the second stage uses the variation in remembered positive experiences (induced by random assignment to the positive/negative prime conditions) to recover the unbiased effect of recalling a positive experience on health-service satisfaction.

To analyze the factors that moderate the influence of remembered experience, our survey included additional questions, which the respondents answered before the experimental

manipulation. First, we operationalized disconfirmation as the difference between perceptions of health-service performance and the respondents' expectations. To capture expectations respondents were asked to rate the importance of good-quality public-health services on a scale of 1–7, with higher values implying higher expectations. This question appeals to the beliefs citizens have concerning the relevance of having good quality public services. It is similar to items previously used in the literature in which citizens are asked about how well the government should serve them (Petrovsky et al. 2017). The measure was chosen after reviewing the list of expectations measures collected by Favero and Kim (2021) and to avoid the use of the word "expect" as citizens may interpret it differently as a prediction or as a normative question (Hjortskov 2020).

To assess their perceptions of health-service performance respondents were asked to rate how often they received good-quality service when they visited the doctor, with responses ranging from 1 (never) to 7 (always). In the resulting disconfirmation measure, positive values indicated that performance surpassed expectations, while negative values indicated that performance fell short of expectations.

All estimations also included the following control variables: age, gender, education, and health status, as well as measures of disconfirmation and ideology (respondents were asked to locate themselves on a left (=0) to right (=10) continuum).

Control variables were included in all the models for two reasons. First, given the random assignment of respondents to treatment conditions, the control variables were included to increase estimator efficiency and precision by reducing variability in the outcomes of interest. This approach has been used in similar experimental studies based on IV models, including Hvidman (2019). Second, given that our theory hypothesizes that the impact of a remembered positive experience on satisfaction will be moderated by disconfirmation and ideology these variables are not randomly assigned. That is, they are measured pretreatment and not manipulated. To avoid any potential confounds, we followed the advice of Kam and Trussler (2017) and proceeded immediately to a model that included these moderators as covariates.

Results

We begin by analyzing the intent-to-treat effect (ITT) of being assigned to recall a positive prior experience on the evaluation of public services. The results, summarized in Table B5 in the appendix, reveal that in comparison to being assigned to report a negative experience, being assigned to recall a positive experience improves one's satisfaction with health services by 0.096 points. However, this difference is not statistically significant at conventional levels. In any case, given the high levels of noncompliance described in the previous section, this ITT is not very informative since many of those assigned to report a negative experience did not do so. This is why we do not turn to our main estimation strategy based on instrumental variables. However, one should consider that while the ITT may not fully recover the impact of the manipulation it may be a close estimate of the potential real-world impact of the intervention.

Table 3 summarizes the results of the instrumental-variable estimation used to analyze whether and to what extent a prior positive health service experience could improve evaluations of this public service. Before analyzing the results, it is important to focus on the first-stage instrumental-variable estimation. The OLS estimates for this first stage are summarized in Table 1, column 1. As expected, the results indicate that random assignment to the positive—as opposed to negative—prime condition increases the probability of reporting a positive experience in the prime task. This effect is statistically significant and substantively relevant. Being assigned to the positive prime condition increases the probability of reporting a positive experience in the prime task by 19%. Hence, our instrument fulfills the key relevance (or first-stage) assumption for estimating an IV model (Huntington-Klein 2021).

The second model in Table 1 uses the variation induced by random assignment to the positive cue (first stage) to estimate the exogenous effect of recalling a positive experience on health-service

Table 3. The impact of remembered positive experience on health-service satisfaction—an estimation of instrumental variables.

	(1)	(2)
	First stage (OLS)	IV Estimate (2SLS)
Experimental treatment = Positive prime	0.190*** (0.02)	
Remembered experience = Positive		0.545^{+} (0.31)
Controls	Yes	Yes
F-statistic	120.33	
Prob > F	.001	
Observations	1512	1512

Note: All models are conditional on the full set of control variables: gender, age, education, disconfirmation, health status, and ideology (standard errors in parentheses).
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

satisfaction. In line with the second hypothesis, this effect is positive. Recalling a positive—as opposed to negative—experience increases a respondent's level of satisfaction with the public service in question by 0.54 points on average.[6] The difference between respondents who recall positive and negative experiences is substantively relevant, amounting to a change of 0.38 standard deviations in the dependent variable. However, some uncertainty surrounds this estimate, which is statistically significant only at the 10% level. One must also note that these effects are estimated only among compilers, which limits, to a certain extent, the external validity of these results.

We now investigate whether the effects of remembered positive or negative experiences are moderated by individual disconfirmation levels (H3). To this end, we divide the sample between individuals with negative disconfirmation (performance evaluations fall short of expectations), those with no or zero disconfirmation (performance evaluations meet expectations), and those with positive disconfirmation (performance evaluations surpass expectations). These groups differ in size, as 1.096 respondents have negative disconfirmation, 312 respondents have no disconfirmation, and 104 have positive disconfirmation.

Figure 2 presents the results of the IV models fitted to each disconfirmation group. Specifically, the results summarize the exogenous effect of recalling a positive experience on health-service satisfaction in each of the three groups; full results can be found in Table B3 in the appendix. The results are in line with the tree hypothesis. Although a remembered positive experience has a positive effect on the health-service evaluations of individuals with negative disconfirmation, it does not have the same effect on those with no or positive disconfirmation. Among respondents with negative disconfirmation, recalling a positive experience increases health-service satisfaction by 1.2 points. This is a substantial increase of 0.84 standard deviations in the variable measuring health-service satisfaction.

The results are quite similar if an IV model is fitted with an interaction between reporting a positive experience and the level of disconfirmation (measured between −6 and +6), instead of dividing the sample between three groups. The results summarized in Table B4 in the appendix reveal that the product term between remembered positive experience and disconfirmation, obtained through the 2SLS model, is negative and statistically significant ($p < 0.05$). In other words, the positive effects of remembered positive experiences on health-service satisfaction become weaker at higher levels of disconfirmation and are only positive and statistically significant among people with negative disconfirmation.

Discussion

This study began by pointing out a problem facing public managers, who need to find ways to change deep-rooted negative assumptions about public-sector performance (Rainey and Bozeman 2000; Marvel 2015). This problem makes it difficult for governments to persuade citizens that it is important to hire talented individuals to work for public services or to increase public budgets (Garrett et al. 2006; Hvidman 2019). The findings of our investigation revealed two main suggestions for practice which can contribute to ameliorating this practical problem and

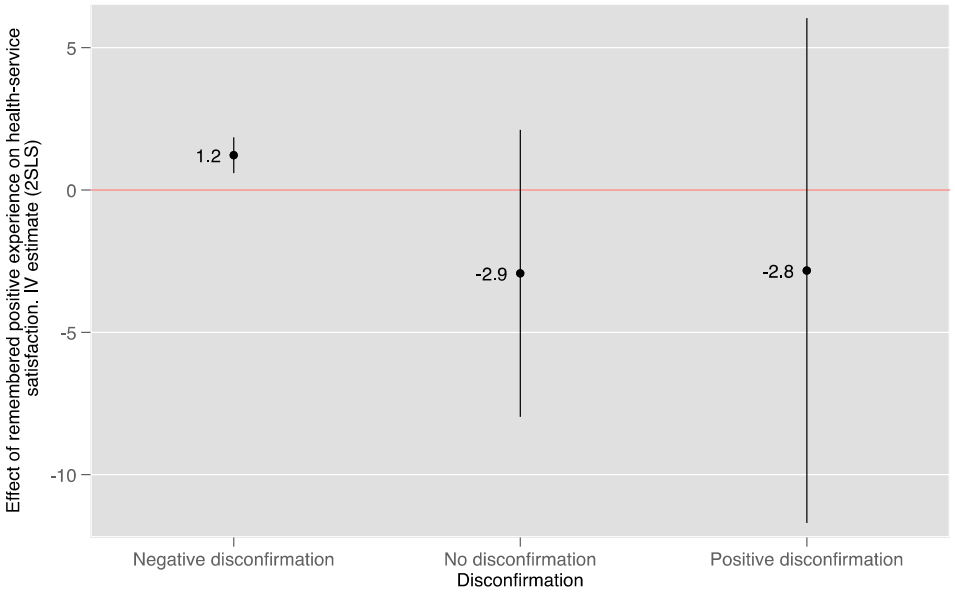

Figure 2. The impact of remembered positive experience on health-service satisfaction, based on the level of disconfirmation—an estimation of instrumental variables.

two main theoretical contributions concerning the EDM, the relationships between prior expectations, perceived performance, and the determinants of satisfaction.

First, the private consumer literature had identified a problem of the "direct link" from perceived performance to satisfaction which raised doubts about the appropriateness of disconfirmation-of-expectations as a mediating variable in the EDM. The main concern was that most of the variation in satisfaction could be explained by one variable, perceived performance. This question raised a discussion on the type of performance measures used and the insufficient capturing of the mental process leading to satisfaction. Various researchers suggested adding multiple comparison standards (Oliver 2010) addressing the role played by emotions in the application of EDM (Phillips and Baumgartner 2002). This call was based on the psychological literature that sees cognition and emotion as interactive (Storbeck and Clore 2007) and cognitive feelings of ease-of-retrieval as a source of information when forming judgments (Greifeneder et al. 2011).

Second, the public performance literature focusing on public services had experimented with sending messages to citizens on the performance of public services to change their expectations and have an impact on their satisfaction. However, there was a need to experimentally test these assumptions and advance the research knowledge by testing the effects of cognitive and affective elements (Andersen and Hjortskov 2016; Hjortskov 2019). In the present study, we have followed this call by asking citizens to recall personal good and bad experiences with public health services, triggering a process that changes the comparison standard and the mental process of evaluation. Making their memories clearer and recalling their personal experiences does not make the evaluation of satisfaction less rational. On the other hand, when there is high personal involvement in the form of an affective reaction there is a positive effect on satisfaction.

As with many other behavioral aspects, the observed effects depend on the personality traits, values, and attitudes (Ajzen and Fishbein, 1980). In this study, we see that individuals who, because of their personal characteristics, value system, or political ideology, expect more from public organizations and are more critical of publicly provided public services, recalling positive personal experiences with emotional cues has a positive effect on their satisfaction. When they are primed with positive memories of past service encounters, they experience a stark contrast with their negative disconfirmation. This contrast makes the positive memories more impactful as they stand out, becoming more distinct against the backdrop of a service that is considered

generally underperforming. Essentially, the worse the disconfirmation, the better the positive experiences recalled will seem, thereby having a stronger effect on overall satisfaction.

From a practical point of view, depending on the national context and policy area, citizens may have a variety of attitudes toward services provided by public organizations. In a favorable context, citizens can be encouraged to consider a wider perspective, reducing their current frustrations by activating their memory and affective links with services that provided good treatment in the past (Grimmelikhuijsen and Porumbescu 2017; Andersen and Hjortskov 2016). In a less favorable context, lower levels of trust in the system and lower levels of expectations with public services can be improved if public organizations improve performance but also if they remind citizens of their encounters with public providers and personal positive experiences despite resource limitations and the need to maintaining a certain level of uniformity and solidarity in the provision of public services.

From a methodological perspective, this study is interesting because it involves a case of imperfect compliance. Such situations can be relatively common in randomized experiments, as individuals do not always do what they are randomized to do (Huntington-Klein 2021). For example, in studies that randomly assign patients to new medications, some participants take the medication, while others ignore the prescriptions they are given. However, such situations are much less common in the public administration literature. Since they are likely to occur more and more often as more experiments are carried out, the present study can act as a reference for other scholars facing similar compliance issues.

Conclusions

Our first conclusion is that the EDM should continue to be applied (Zhang et al. 2022). The disconfirmation-of-expectations variable is relevant and should not be discarded in the study of public services as it is useful to understand how citizens attribute changes in expectations, perceptions of performance and satisfaction to managerial and environmental changes. From this perspective, it is an effective tool for public organizations facing the problem of having a poor image independently of organizational efforts to improve performance.

The second conclusion is that perceived performance and satisfaction are not the same. The difference between their scores depends on the type of performance measures and the comparison standards used in the mental process leading to satisfaction. The more that citizens appeal to their personal experience, to emotional elements, the more differentiation there will be between perceived performance and satisfaction. This is interesting for citizens who have excessively high expectations in a context of limited resources and for citizens who demand a lot from public services because they do not trust public organizations but their personal experience with public services is better than they would like to admit. Citizens' reactions toward public organizations are diverse depending on personal characteristics, including public-service support and political orientation, but external interventions can frame their opinions of public services and public managers can use this possibility to increase the legitimacy of their interventions.

A final and interesting question is whether it is ethical to battle the negative bias against publicly provided public services by priming positive information about previous good encounters. Perhaps due to a ceiling effect, priming positive information among people who already believe publicly provided services do well is not so necessary to improve their satisfaction levels. The ethical question can be resolved by appealing as we did in the experiment to both positive and negative personal experiences. In a good number of public services when citizens are asked to recall a negative experience, it may well happen that they cannot remember one and prefer to explain a positive experience. Additionally, cognitive and affective feelings are a much more frequent event than it is often assumed, and their influence is not necessarily undesirable. Reliance on memories and affection toward public services can be a sensible strategy for evaluating public services.

Our findings and conclusions are subject to some limitations. As this research incorporates a survey experiment, the findings are limited by its design, the variables included in the analysis, and the characteristics of respondents. As we also point out above, our experiment does not incorporate a control group, where respondents are not asked to recall an experience. Hence, our manipulation

should be considered a valence treatment (positive vs. negative experience). This study also may have external-validity limitations, as its results cannot necessarily be generalized to other public services and geographical settings. Since our experiment was focused on public health services, we do not know if the provision and delivery of health services may respond to different principles of organization and funding in other public services. Future research could delve into the contextual factors that affect the relationships shown in this study. For instance, by considering how often health services are used and the extent to which citizens depend on them psychologically. Similar studies can analyze negatively perceived public service areas. Public perceptions differ significantly when public services (e.g., traffic police) lead to negative interactions, like receiving a penalty. More broadly, further research is needed to connect evaluations of public service performance with prior attitudes toward public-sector organizations, contextual factors, and political assumptions about public services. Finally, there is a panoply of external interventions that could be tested, using factors that could influence the relationship between perceived performance, public service satisfaction, and the impact of cognitive recollection and affective feelings on public service perceptions.

Notes

1. In the case of education, the quotas established that one third of respondents should have low levels of education, one third should have mid-range levels of education, and one third should have high levels of education. See Table A1 in the appendix for further details. In the case of age, the highest quota corresponds to people aged 65–74, due to limitations in the pool of online panelists available to Netquest. The oldest respondents in our sample are therefore 74 years old.
2. See Table A2 in the appendix for details of the wording and coding of all survey items used throughout the article.
3. The manipulation check was requested after the main outcomes of interest were measured.
4. In Table A3 in the Appendix we also cross-tabulate the random assignment to a positive or negative probe and the hand-coding of responses. The conclusions that we reach through these additional results are similar to those that we reach when focusing on the manipulation check.
5. To reassure readers that our results are not driven by our reliance on this particular manipulation check, though, we replicate our main estimation using the hand-coded responses as an instrument (instead of the manipulation check). The results for this alternative IV estimation can be found in Table B6. These results are very similar to those of our main estimation summarized in Table 3. Hence, it seems that our results are not driven by the particular characteristics of this manipulation check. To conduct these analyses we rely on the hand-coded responses to the probe question, which we coded into three categories: (i) positive; (ii) neutral; (iii) negative. For the purposes of these analyses we collapse the negative and neutral categories and attribute them the value 0 and we attribute the value 1 to positive responses. This coding ensures that the estimation strategy for this robustness check is as similar as possible to our main estimation strategy.
6. These results are obtained through an IV estimation, conditioned on the following control variables: gender, age, education, disconfirmation, health status, and ideology. Table B1 in the appendix summarizes the complete model, including coefficients that correspond to these control variables. Table B2 summarizes the results of an alternative specification, which does not include these control variables. The estimated effect of recalling a positive experience (obtained through the IV estimation) is 0.504. This is very close to the estimate obtained through the main specification, which includes control variables. In this case, the estimate fails to reach the 10 percent level of statistical significance obtained using the original specification. However, controls are included to increase the efficiency and precision of the estimators by reducing variability in the outcomes of interest. As the controls seem to achieve this result, the study adopts an estimation with controls.

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Appendix A. Descriptive statistics and questions used in the experiment

Table A1. Sample descriptive statistics (socio-demographic characteristics).

n = 1511	%
Gender	
Female	50.26
Male	49.74
Age	
18–24	11.38
25–34	15.15
35–44	22.42
45–54	20.30
55–64	17.79
65–74	12.96
Education	
Primary and lower-secondary education	33.2
Higher-secondary education and vocational training	34.13
University education	32.67
Work status	
Working	61.11
Housework	4.3
Retired	18.25
Unemployed	8.4
Student	6.35
Other	1.59
Employment sector	
Public	18.58
Private	41.14
Third	1.39
Not working	38.89

Table A2. The wording of questions and the coding of variables.

	Questions in English and Spanish (original survey language)
Expectations	How important is it for you that public-health services are good quality? (1 A little—7 A lot) *¿Qué importancia otorgas a que los servicios sanitarios públicos tengan una buena calidad? (1 Poca—7 Mucha)*
Perceived performance	Based on your own experience of visiting a public doctor, how often do you receive a good-quality health service? (1 Never—7 Always) *Según tu propia experiencia, cuando vas al médico de la pública ¿con qué frecuencia recibes servicios de salud de calidad? (1 Nunca—7 Siempre)*
Randomization	
T1 Positive prime	Briefly describe a situation in which a family doctor, public health-service specialist, or public hospital treated you well (Open answer. Minimum 20 characters, maximum 400. You must answer this question in order to continue the survey. Keep your answers in text format.) *Describe brevemente una situación en la que un/a médico/a de familia o especialista de la sanidad pública u hospital públicos, te tratara bien. [Respuesta abierta. Mínimo 20 caracteres, máximo 400. No dejar avanzar si los requisitos no se cumplen. Guardar respuestas en formato de texto]*
T2 Negative prime	Briefly describe a situation in which a family doctor, public health-service specialist, or public hospital did not treat you well (Open answer. Minimum 20 characters, maximum 400. You must answer this question in order to continue the survey. Keep your answers in text format.) *Describe brevemente una situación en la que un/a médico/a de familia o especialista de la sanidad pública u hospital públicos, no te tratara bien. [Respuesta abierta. Mínimo 20 caracteres, máximo 400. No dejar avanzar si los requisitos no se cumplen. Guardar respuestas en formato de texto]*
End of the randomization	
Satisfaction	What is your level of satisfaction with public-health services? (1 Very dissatisfied—7 Very satisfied) *¿Cuál es tu grado de satisfacción con los servicios públicos de sanidad? 1 Muy insatisfecho—7 Muy satisfecho)*
Manipulation check	In the situation you have described, how did the doctors treat you? 1. They treated me well. 2) They did not treat me well. *En la situación que has descrito, ¿cómo te trataron los/as médicos/as? 1. Me trataron bien. 2) No me trataron bien*
Control variables and moderators (all measured prior to treatment)	
Ideology	When talking about politics, people normally use the expressions "left" and "right." On a scale of 0 to 10, where would you place yourself, if 0 is "extreme left" and 10 is "extreme right?" *Cuando se habla de política se utilizan normalmente las expresiones izquierda y derecha. ¿Dónde te colocarías tú? Utiliza una escala de 0 a 10, donde 0 es "Extrema derecha" y 10 es "Extrema izquierda."*
Health condition	Considering your health in general, how would you evaluate your own health? Use a scale from 1 to 7, where 1 is "Very bad" and 7 is "Very good" *Pensando en tu salud en general, consideras que tu estado de salud es… Utiliza una escala de 1 a 7, donde 1 es "Muy malo" y 7 es "Muy bueno"*

Table A3. Cross-tabulation treatment assignment and hand-coded tone of responses provided in open-ended response (observations and column percentages in parentheses).

	Treatment assignment (prime)	
Hand-coded tone of open-ended response	Positive prime	Negative prime
Positive	646 (86.13)	206 (27.03)
Negative	24 (3.20)	475 (62.34)
Neutral	80 (10.67)	81 (10.63)

Appendix B. Additional results

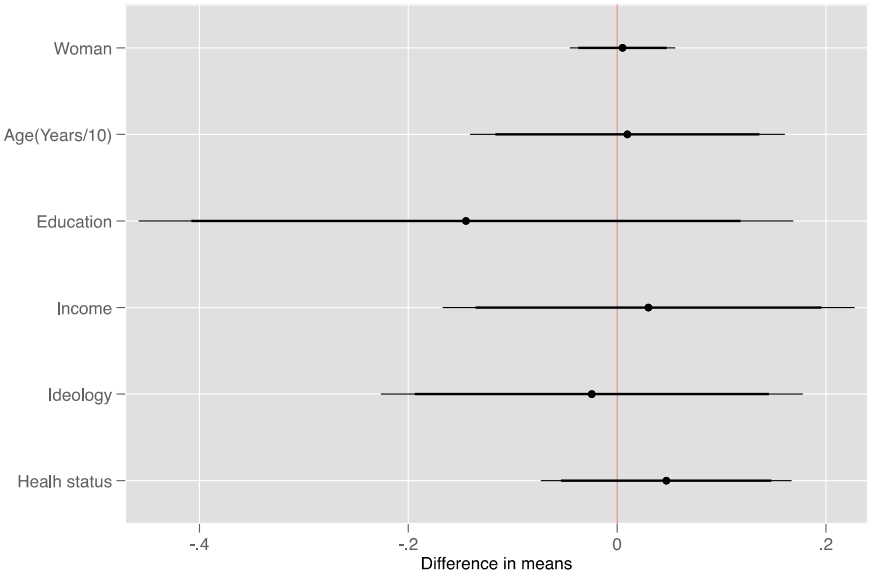

Figure B1. Balance tests between key covariates assigned to the positive and negative prime conditions. Note: Mean differences (t-tests) between those assigned to the positive and negative prime conditions. The thick and thin lines are at 90 and 95 percept confidence intervals, respectively.

Table B1. The impact of remembered positive experience on health-service satisfaction—an estimation of instrumental variables. Full results, including control variables.

	(1) First stage (OLS)	(2) IV Estimate (2SLS)
Experimental treatment = Positive prime	0.190*** (0.02)	
Gender (Female)	−0.047** (0.02)	−0.001 (0.06)
Age	0.002*** (0.00)	0.016*** (0.00)
Education	0.008** (0.00)	0.009 (0.01)
Disconfirmation	0.045*** (0.01)	0.413*** (0.02)
Health status	0.013+ (0.01)	0.164*** (0.03)
Ideology	−0.007 (0.00)	−0.024 (0.01)
Remembered experience = Positive		0.545+ (0.31)
Constant	0.688*** (0.07)	3.559*** (0.33)
Controls	Yes	Yes
F-statistic	120.33	
Prob > F	0.001	
Observations	1512	1512

Standard errors in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table B2. Impact of remembered positive experience on health-service satisfaction. An estimation of instrumental variables without control variables.

	(1) First stage (OLS)	(2) IV Estimate (2SLS)
Experimental treatment = Positive prime	0.191*** (0.02)	
Remembered experience = Positive		0.504 (0.37)
Controls	No	No
F-statistic	112.75	
Prob > F	.001	
Observations	1512	1512

Note: Standard errors in parentheses.
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table B3. The impact of remembered positive experience on health-service satisfaction, based on the level of disconfirmation—an estimation of instrumental variables.

	(1) First stage (OLS)	(2) IV Estimate (2SLS)	(3) First stage (OLS)	(4) IV Estimate (2SLS)	(5) First stage (OLS)	(6) IV Estimate (2SLS)
Treatment = Positive prime	0.233*** (0.02)		0.072* (0.03)		0.087 (0.06)	
Remembered experience = Positive		1.222*** (0.32)		−2.926 (2.57)		−2.828 (4.52)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic	115.98		4.95		1.83	
Prob > F	.001		.026		.179	
Disconfirmation	Negative	Negative	None (0)	None (0)	Positive	Positive
Observations	1096	1096	312	312	104	104

Note: All models are conditional on the full set of control variables: gender, age, education, disconfirmation, health status, and ideology.
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table B4. The impact of remembered positive experience on health-service satisfaction, based on the level of disconfirmation—an estimation of instrumental variables.

	(1) First stage (A)	(2) First stage (B)	(3) IV Estimate (2SLS)
Treatment = Positive prime	0.132*** (0.02)	−0.004 (0.07)	
Disconfirmation	0.064*** (0.01)	0.548*** (0.02)	1.112*** (0.19)
Treatment = Positive prime * Disconfirmation	−0.039*** (0.01)	0.261*** (0.03)	
Remembered experience = Positive			−1.332* (0.67)
Remembered experience = Positive * Disconfirmation			−0.911*** (0.23)
Controls	Yes	Yes	Yes
Observations	1512	1512	1512

Note: First-stage model A predicts remembered positive experience as a function of random assignment to the positive prime condition and its interaction with disconfirmation. First-stage model B predicts the interaction between remembered positive experience and disconfirmation, as a function of random assignment to the positive prime condition and its interaction with disconfirmation. All models are conditional on the full set of control variables: gender, age, education, disconfirmation, health status, and ideology.
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table B5. Intent to treat effects.

	(1)
Treatment = Positive prime	0.096 (0.07)
Constant	4.920*** (0.05)
Observations	1512

Standard errors in parentheses.
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table B6. The impact of remembered positive experience on health-service satisfaction—an estimation of instrumental variables in which the instrument is not based on the manipulation check on remembered experience but, on the hand-coded responses to open-ended prime task.

	(1) First stage (OLS)	(2) IV Estimate (2SLS)
Experimental treatment = Positive prime	0.592*** (0.02)	
Response provided in prime task = Positive		0.175^{+} (0.10)
Controls	Yes	Yes
F-statistic	903.97	
Prob > F	.001	
Observations	1512	1512

Note: All models are conditional on the full set of control variables: gender, age, education, disconfirmation, health status, and ideology (standard errors in parentheses).
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$