Journal of Behavioral and Experimental Economics 105 (2023) 102031

Contents lists available at ScienceDirect

Journal of Behavioral and Experimental Economics

journal homepage: www.elsevier.com/locate/jbee

Status and reputation nudging☆

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ARTICLE INFO

JEL:
C93
G41
G22
D12

Keywords:
Insurance brokers
Natural field experiment
Credence goods
Status
Reputation

ABSTRACT

We conduct a natural field experiment with 808 insurance brokers to test the effects of compliments including status or reputation nudges on reciprocal behavior. We send e-mail requests to insurance brokers asking them to share their expertise on specialist issues. Compared to a neutral request, we find that reputation nudges significantly increase brokers' response rates and ultimately their willingness to follow through with an initial positive response. We find suggestive evidence for status nudges having a similar impact. These findings hold for several specifications, such as different geographical areas, and for brokers employed with large companies.

1. Introduction

Positive reciprocity is an inherent feature of human (inter)actions in a multitude of contexts. As summarized by Fehr and Gächter (2000), small gifts to prospective donors can increase giving to charities (Falk, 2007), and free samples from a smiling supermarket attendant can boost sales of the respective product (Cialdini, 2007). In the health sector, small gifts from patients to doctors decrease the prescription of unnecessary antibiotics (Currie et al., 2013). In labor market environments, workers reciprocate high initially-set wages, monetary gifts, or tokens of appreciation by providing increased effort (see, e.g., Akerlof, 1982; Charness, 2004; Cohn et al., 2015; Fehr & Gächter, 2000; Fehr et al., 1993; Kube et al., 2012a).

In the majority of the situations described above, acts of reciprocity are triggered by one party presenting the other with *monetary* or at least *material* goods (such as Thank-You-Notes or small articles of daily use).[1] The role of *immaterial* gifts like compliments, however, has been investigated considerably less comprehensively, and is less clear. Early research provided some evidence that friendliness towards customers in the service sector can increase the amount of tips received (Tidd & Lockard, 1978). Recent studies by Kirchler and Palan (2018) and Lavoie et al. (2021) show that in certain contexts, particularly when multiple interactions take place over an extended period of time, upfront compliments induce reciprocal behavior in service personnel, leading to better service both compared to standard interactions and compared to upfront tipping.

In this study, we focus on the impact of compliments on reciprocal behavior in the insurance sector. Using a natural field experiment (Harrison & List, 2004) that involves sending out e-mail requests to brokers, we address the following research question: What is the impact of ascribing status or reputation to an insurance broker (i.e., of status or reputation nudging) on this broker's reciprocal behavior?

☆ We thank Loukas Balafoutas, Stefanie Gäbler, Andrea Schertler, Joep Sonnemans, Thomas Stöckl, and Utz Weitzel for very valuable comments on earlier versions of this paper. We particularly thank Florian Schwaiger for excellent research assistance. Financial supported by the Austrian Science Fund FWF (START-grant Y617-G11 and SFB F63) and the Swedish Research Council (grant 2015-01713) is gratefully acknowledged. This study was ethics approved by the IRB of the University of Innsbruck. The authors declare that no financial interests or personal relationships influenced the work reported in this paper.

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[1] The unifying feature of all these situations is that the people who respond to acts of kindness received do not expect any future material benefits for themselves, which is what distinguishes reciprocity from related concepts such as cooperativeness. Also, reciprocity is different from altruism, which in itself is unconditional and *not* a response to any previously received benefits (Fehr and Gächter, 2000).

https://doi.org/10.1016/j.socec.2023.102031
Received 12 September 2022; Received in revised form 14 April 2023; Accepted 8 May 2023
Available online 16 May 2023

We call our compliments *nudges*, since we expect that the appeal to the broker's status or reputation changes reciprocal behavior compared to a neutral appeal without giving any monetary incentives. This follows Thaler and Sunstein's (2021) definition, according to which a nudge is "any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives." (p. 8)

In particular, the aim of our study is to analyze whether those salient concepts of status and reputation also matter in situations where insurance brokers are not approached with the objective to purchase a product, but only to provide their insights on the topic of insurance brokerage in their role as experts in the sector. In our study, we partner with a master's student, who sent e-mail requests to brokers. In these e-mails, the student asks for an appointment to get answers to some questions for his thesis. Importantly, the student who sent these e-mails actually ran a survey for his thesis and we added to this design by varying the e-mail request to measure status and reputation effects via brokers' response rates.

From a practical perspective, we designed our experiment to not include a potential business interaction, which would induce a more "natural" interaction, for two reasons. First, we did not want to explicitly deceive brokers with respect to potential future earnings as a consequence of their responses; and second, since the type of behavior that we want to observe is *reciprocal* behavior on the broker's side. Not including a potential business interaction allows us to disentangle the concept of reciprocity from related concepts such as cooperativeness, where the latter entails that there is some form of (potentially monetary) consequence for the insurance broker reacting to the non-monetary gift in the form of a compliment. With regard to our research question, we interpret our observed response rates as the lower bounds of response rates that we would expect for requests including an actual potential business interaction.[2]

The main reason for why we chose the insurance sector as our focus is that both *status* and *reputation* are arguably particularly relevant for this sector. Insurance brokerage is a market in a credence goods context (Dulleck & Kerschbamer, 2006): customers typically cannot observe or verify the quality of the service at the time of purchase, and oftentimes there is also no ex-post verification of quality. Customers in such a context need to rely on observable proxies for quality. Both the status and the reputation of a service provider are two obvious candidates for such proxies, supported by literature, as outlined below. We show that in such an environment, a simple nudge including an appeal to status or reputation can already significantly impact behavior. Even though we do not directly appeal to their role as a salesperson, we still appeal to the brokers in their role and professional identity as experts in this industry.

With respect to status, Kirchler et al. (2018) and Kirchler et al. (2020)) provided first evidence on the role of status in the finance industry in general. In lab-in-the-field experiments with financial professionals, these studies show that professionals strive for high relative rank among their peers in investment decisions, documenting the importance of hierarchical status among financial professionals in a situation similar to ours, without any direct business interaction involved. The latter of the two studies furthermore shows that financial professionals increase risk-taking on behalf of others in case they rank lower than their peers. In other words, their need for social status drives professionals to take (potentially) disproportionate risks not only for themselves, but also with potential consequences for third parties.

With respect to reputation, Kreps & Wilson, 1982 point out the importance of reputational concerns in credence goods markets where verification is possible in the long run: sellers are concerned about reputation and this concern increases their reciprocal behavior. However, these effects are situation-dependent: in markets where an expert's history of service provision – but not of its respective success – is observable for potential future customers, the studies of Ely and Välimäki (2003) and Ely et al. (2008)) suggest that reputational concerns may even lead to less reciprocal behavior. They argue that in markets where only a quantitative, but no qualitative track record is available, providing better quality may necessitate compromising on quantity, which in turn may adversely affect a seller's reputation. In a later experimental study, however, Grosskopf and Sarin (2010) conclude that the positive effects of reputation are generally more widespread than the negative ones.

Note that the terms *status* and *reputation* are often used interchangeably even though the concepts they refer to differ along several dimensions (Sorenson, 2014). Status can be seen as an externally assigned measure of social position, and is the consequence of the pattern of social relationships (Dimov & De Clercq, 2006; Patterson et al., 2014). As such, the term "status" is highly intertwined with hierarchical position, an ordering system that is somewhat stable, and that serves as a measure of social standing (Patterson et al., 2014; Podolny, 2010). In the case of individuals, status depends on the relative position compared to a similar reference group and consequently always stems from social standing (Bitektine, 2011; Sorenson, 2014). This relative social standing gets its value from the fact that not every- one has such standing; given the pyramid shape of the social hierarchy, a social position is higher the fewer people one shares it with (Sorenson, 2014). Additionally, we observe status seeking even when no immediate or delayed monetary returns can be derived from competing (Duesenberry et al., 1949). Reputation, in contrast, is linked to a history of quality, and is defined as a measure of past quality, performance, or actions (Ertug & Castellucci, 2013; Jensen & Roy, 2008; Washington & Zajac, 2005). As a consequence, reputation is an informative signal (and not merely cheap talk) and usually serves as a proxy for future behavior (Jensen & Roy, 2008). Reputation carries information about which products or services one may want to purchase (Fombrun, 1996), since this reputation arises from prior actions (Sorenson, 2014).

In the present study, we use compliments in the form of status and reputation nudges, embedded in e-mail inquiries to independent insurance brokers in a natural field experiment sent out by a master's student for his thesis. The topic of the thesis was not related to our design, and we only collaborated by framing the requests according to our treatments as outlined below. By *status* and *reputation nudging*, we refer to the practice of ascribing high status or good reputation to a person in direct communication. Our outcome measure is the response rate to these e-mails across the different nudging treatments, relative to a neutral request.

In particular, we subdivided requests into three different treatments: a neutral wording, a wording ascribing high status to the insurance broker, and a wording ascribing a high reputation to the insurance broker. If a broker responded in the affirmative, a link to the master student's survey was sent out. The survey included general questions about altruism, reciprocity, status, competitiveness, and risk attitudes.[3]

In the status nudging treatment, we ascribe high status to an insurance broker by including, in the student's e-mail message, *"After studying several websites [...] I got the impression that you are the expert in the area."* In the reputation nudging treatment, we ascribe good reputation to a broker by writing *"You were recommended by the majority of*

[2] Given our experimental setup – a natural field experiment –, which does not allow us to control for beliefs, we cannot completely rule out that there was an expectation on the broker's side that a response in the affirmative (willingness to help the student) would result in a higher probability of engaging in a business relationship at some point in the future. We discuss the implications of this caveat in section 4

[3] The exact wording of the emails as well as the particular contents of the survey can be found in appendix A2 and A3, respectively. Additionally, we include summary statistics of all results in appendix A6. However, the contents of the survey were not of interest for our current study and were only used in the student's actual thesis.

my relatives and friends." Hence, in our context, we analyze status as well as reputation as a subjective perception (either deriving from own research on the internet – STATUS, or from advice from family and friends – REPUTATION) rather than as objective characteristics, such as those stemming from public tests and ratings. We acknowledge that the status and reputation nudges are deceptive because brokers were neither actually recommended by relatives and friends, nor necessarily the expert in the area as indicated in the e-mail. While experimental economics has a strict no-deception norm for laboratory experiments, we argue that our field setting is an exception in which this type of deception is unavoidable. In a natural field experiment, it is not possible to randomly select insurance brokers and test the impact of status and reputation nudges. While we could have referred to objective ratings for status, such recommendations are not available for all brokers and particularly not for our reputation treatment. Moreover, relying on objective ratings for reputation would not allow us to effectively test the effect of flattery or compliments because the ratings can vary widely among brokers and are influenced by past business interactions that we are not targeting in our study. In such settings, there is a consensus that some level of deception is acceptable (see Charness et al., 2022; Krawczyk, 2019, for example). It is important to note that the no-deception rule is particularly critical in laboratory experiments where subjects need to trust the experimenter to ensure an effective incentive system with real monetary rewards. Our study, however, is not a laboratory experiment and we do not employ monetary incentives (in addition to the previous references, see Bonetti, 1998, for a discussion).[4]

We want to emphasize that we do not have a clear hypothesis regarding the relative strengths of the effects in our two treatments, but that we expect both status and reputation to have a positive impact on the response rate. The nature of our study is thus exploratory: we want to generally address the question to what extent both status and reputation nudges impact reciprocity in that particular context. We expect the nudges to be effective based on the social labeling theory, which is "a persuasion technique that consists of providing a person with a statement about their personality or values (i.e., the social label) in an attempt to provoke behavior that is consistent with the label" (Cornelissen et al., 2007, 279). This corresponds to our treatments, where we make statements about the respective broker's status or reputation, following the student's request.

In additional exploratory analyses, we study differences in response rates between brokers located in urban vs. in rural areas, and between brokerage companies of differing sizes, which we consider as important mediating factors of the strength of a possible effect.

First, the numbers of insurance brokers in urban and rural areas differ, with sometimes only a handful of brokers serving an entire region in rural areas. In these areas, there are fewer colleagues as well as fewer potential customers than in metropolitan areas, which are characterized by a high density of brokers and population. Since the effects of status and reputation could possibly differ between rural and urban areas, we analyze this in more detail. On the one hand, status and reputation nudging might not have a particularly strong effect on response rates in rural areas, since being conscious about and maintaining a high status and/or reputation might be less important there, given that brokers face less competition for potential clients. On the other hand, in rural areas brokers might be even keener on maintaining a once achieved status or reputation, since information about potential misconduct could spread much faster in an – on average – tighter network of friends and acquaintances in rural areas.

Second, the size of the company employing the broker is a plausible mediating factor of the effect of status and reputation nudging on response rates. On the one hand, status and reputational concerns could play an important role in smaller companies, since the marginal benefit from an additional customer is higher, and status and especially reputation as a proxy for quality are more salient. We base this conjecture on the observation that the small companies in our sample are mostly one-person businesses, where the earnings of the business owner solely depend on the number of customers and their satisfaction, but not on a secure monthly (base) salary, as would typically be the case in larger companies. On the other hand, we expect larger companies to be more likely to send their employees to specialized training programs to increase customer satisfaction and loyalty, which might make the concepts of status and reputation more salient for brokers of larger companies.[5]

Overall, we find that reputation nudging significantly increases brokers' response rates compared to the neutral baseline and observe suggestive evidence that status nudging works significantly better than the neutral baseline. These effects are robust to studying either the response rate overall, or only positive (affirmative) responses (i.e., brokers who indicated that they were open to answering the student's questions). Considering urban and rural areas separately, we observe qualitatively similar patterns overall. Controlling for company size, we observe similar overall response rates in small and large companies but find that reputation nudging significantly increases response rates in *larger* companies only. We furthermore find suggestive evidence that status nudging has a positive impact on response rates only in *larger* companies.

Our findings underline brokers' awareness of the significance of status and reputation and, furthermore, that the two types of nudges impact brokers' behavior. This change of behavior is already achieved by simple compliments.

In addition, previous studies have not been able to disentangle the impact of status from that of reputation. Thus, a contribution of our study is that we take a first step towards determining the independent impacts of the two concepts. The field experiment that is most closely related to our present study is Kirchler and Palan (2018). They test the impact of private compliments (thus ruling out utility derived from increased status through public observability of the compliment) on salespersons' reciprocal behavior in experience goods markets. They show that private compliments to salespeople significantly increase salespeople's reciprocal behavior in everyday interactions with customers (salespeople provide larger portions of ice cream and doner durum in return to compliments). However, the compliments applied in Kirchler and Palan (2018), which are of the type "you have the best ice cream in town", contain both status and reputation components, and the study is thus not able to disentangle the effects of the two.

2. The experiment

We conduct a novel field experiment with 808 insurance brokers to disentangle the effects of status and reputation nudging. Our experiment consists of three treatments: (i) NEUTRAL, (ii) STATUS, and (iii) REPUTATION. We assemble a comprehensive list of independent insurance brokers in Germany by combining the members of the association of German insurance brokers ("*Verband Deutscher Versicherungsmakler (VDVM)*", since merged to become the

[4] The "typical" decision rule of IRB boards in such natural field studies as ours is also based on a cost-benefit analysis: whenever the benefits (implications of study's results) outweigh the costs (effort on the broker's side, in our case), the study is approved. A related example is the paper by (Bertrand and Mullainathan, 2004), where fake CVs are sent out to test for discrimination in labor markets.

[5] In our data, company size is a binary measure, indicating the legal form of the brokerage company. We categorize companies with low legally required equity capital (such as small entrepreneurial companies with limited liability) as "small" companies. These companies are all of company types that are not legally required to pay sales tax (under certain conditions), and as such are also defined as small businesses by German corporate law. We categorize companies with high legally required equity capital (such as the German "GmbH", which resembles an "Ltd" in the UK) as "large" companies

"*Bundesverband Deutscher Versicherungsmakler e.V. (BDVM)*" – all members of this association are independent brokers) with the members of the association of German financial service providers ("*Bundesverband Finanzdienstleistung e.V.*"). In this sense, we thus address the full population, not only a sample, of our target participant pool. Overall, we ended up with 825 e-mail addresses of insurance brokers. Of these, 17 addresses generated non-delivery error messages, leaving us with a final sample of 808 brokers.[6]

In all three treatments, we used e-mail messages with the same baseline text and we approached each insurance broker only once. The master's student we worked with wrote that he was looking for insurance brokers willing to make an appointment to answer a few questions of relevance to the student's master's thesis. During the course of the experiment, all e-mails were actually sent by the master's student, from two *Gmail* addresses in his name. The randomly assigned treatments only differed with respect to the reason the student gave for having chosen the particular broker to contact. In the NEUTRAL baseline treatment, the stated reason for contacting the insurance broker was that the student had come across him/her after studying homepages of insurance brokers and insurance agents. For the STATUS treatment, the student pointed out the specific standing of the insurance broker relative to others in the area ("*[...] I got the impression that you are the expert in the area*"). In the reputation treatment, the student emphasized the broker's reputation ("*[...] you were recommended by the majority of my relatives and friends*"). We report the full text of the respective e-mails in appendix A2. When brokers replied in the affirmative, the student asked them to fill in a short online survey eliciting preferences concerning altruism, reciprocity, competitiveness, status, reputation and risk.

Our main outcome variable of interest is the response rate to our e-mail request. Only personal replies are considered responses; we do not count automatic replies. In our subsequent analysis, we study the content of a response to categorize it as either positive[7] or negative[8]. Due to the few cases of non-delivery errors, we ended up successfully sending 275 e-mail requests in the NEUTRAL baseline, 268 requests in the STATUS treatment, and 265 requests in the REPUTATION treatment. With respect to the coding, we had three people independently categorize response emails into positive and negative responses, as well as cases where the response was ambiguous. The third coder, after having finalized his own, independent categorization, studied all three coders' decisions and determined the final assignment of a response to the positive, negative or ambiguous categories (thus resolving inconsistencies *request. Unfortunately, I have to tell you that I am fully booked until the end of March, since I am also working on a project. I am very sorry. Best regards* [name of insurance broker]." in the three coders' independent categorizations). Ambiguous responses, for example, were e-mails with only a question in response to the student's first request for an appointment.[9] We decided to code these responses as negative, but show (in appendix A5) that our results remain unchanged when instead we code these as positive.

While we can account for obvious non-deliveries through non-delivery reports (i.e., automatic replies that email addresses no longer exist), we do not have access to other metrics such as whether e-mails were opened, flagged as spam, or quarantined. Although being able to filter out those emails that were actually received by a broker would help us to single out the treatment effects even more clearly, we would also have needed to use marketing software to measure campaign metrics. Using such software, the e-mail request would not have been clearly identifiable as a student request. Given that this is an essential element of our experimental design, we did not want to jeopardize it by employing techniques other than recording clear instances of non-delivery. However, since we randomize our participants across treatments and since non-deliveries should thus also be randomly distributed across treatments, we expect them to only have a level effect on our results.

It is important to note that we only measure a lower bound of response rates with our experimental design. Our e-mails do not imply the prospect of a future business interaction, which arguably reduces the number of responses across all three treatments compared to a situation where a prospective client were to reach out. However, to measure reciprocity (in contrast to other concepts like cooperativeness), it is important to not exclude a potential business deal that the broker expects. Naturally, we cannot fully exclude that insurance brokers still react in the affirmative to trigger a potential business interaction in the future or want to avoid negative feedback from the student reported back to his family and friends in the reputation treatment. We discuss this in more detail in Section 4.

In addition to the response rates to the e-mail requests sent, we also analyze treatment effects on the rate of surveys completed.

3. Results

Our final sample of 808 messages generated 360 responses across all three treatments, corresponding to a response rate of 44.6%. When we consider positive responses only, we count 288, which corresponds to a response rate of 35.6% and to a ratio of 80.0% positive responses among all responses. A total of 19 responses, or 5.3% of the 360 responses overall, were ambiguous. Table A2 in the appendix gives an overview of response rates and absolute numbers of responses across treatments for several specifications.

First, we present results regarding overall response rates and positive responses, where the latter are responses that indicate a willingness to help the master's student with his questions. Second, we divide our analysis into observations collected in rural versus urban areas as well as observations from small versus large insurance brokerage companies. Third, we analyze the number of survey responses across treatments as the rate of follow-through on the initial affirmative response to the student's request for help. All tests used throughout the results section are two-sided; we apply Pearson's χ^2-tests throughout the whole section unless indicated otherwise. We define a highly statistically significant effect as $p < 0.001$, a statistically significant effect as $p < 0.005$, and suggestive evidence of an effect as $p < 0.05$, following the proposal by Benjamin et al. (2018).

3.1. Overall and positive responses across treatments

We first look at the general picture and compare response rates across treatments, dividing our analysis into overall responses and positive responses. We explore whether STATUS and REPUTATION nudging have significantly positive effects on response rates compared to the neutral baseline and test whether the nudges entail significantly different response rates. We provide an overview of the detailed distributions across treatments in Table A2 in the appendix.

Result 1. *The overall response rate differs between treatments. We find that* Reputation *nudging has a highly significant, positive impact on response rates compared to the* Neutral *baseline. We also find suggestive evidence that* Status *nudges work better than a* Neutral *request, and that* Reputation *nudging works better than* Status *nudging.*

Support. Fig. 1 shows the response rates across treatments for

[6] The low proportion of out-of-date e-mail addresses (2%) speaks to the quality of the dataset.

[7] An example for a response coded as positive is: "*Hello* [name of student], *that is possible for sure. Please call me to make an appointment. Best regards,* [name of insurance broker]."

[8] An example for a response coded as negative is: "*Dear* [name of student], *thank you very much for your*

[9] An example for that kind of response is: "*Dear Mr.* [name of student], *which questions do you have? Who from your friends and acquaintances recommended me? Please send me your contact details as well as a short CV. Best regards,* [name of insurance broker]."

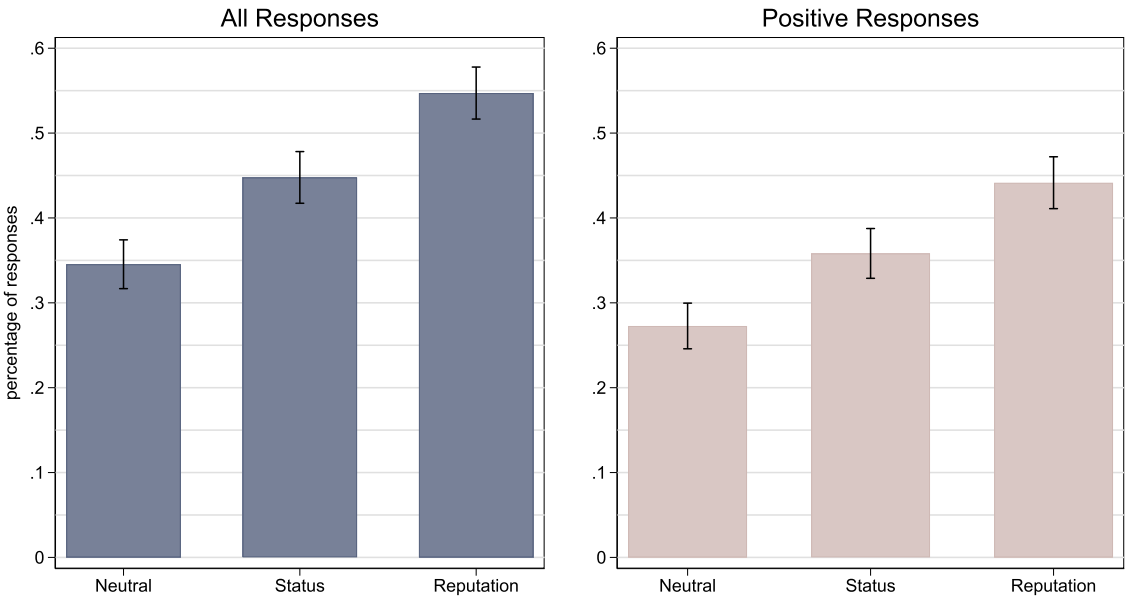

Fig. 1. Response rates across treatments for responses overall and for positive responses: Rates of responses to e-mails requesting an appointment where the student would ask the insurance broker to answer a few questions. Error bars indicate standard errors of the mean.

overall responses (left panel) and positive responses (right panel). Our e-mails with NEUTRAL content yield 95 responses, which corresponds to a response rate of 34.6%. The e-mails in treatment STATUS yield 120 responses (44.8% response rate), and the e-mails in treatment REPUTATION yield 145 responses (54.7% response rate). The observed differences constitute at least suggestive evidence in all pairwise comparisons across treatments. There is suggestive evidence that STATUS yields a higher overall response rate than NEUTRAL, with $\chi^2(1) = 5.940$, $p = 0.015$, and an absolute difference of 10.2 percentage points. We also find suggestive evidence for the REPUTATION treatment triggering higher response rates than the STATUS treatment, with $\chi^2(1) = 5.267$, $p = 0.022$, and a difference of 9.9 percentage points. The difference between the NEUTRAL and REPUTATION treatments is highly significant, with $\chi^2(1) = 22.239$, $p = 0.000$, and a percentage point difference of 20.2. We present an overview over all p-values for treatment differences in Table A3 in the appendix.

Result 2. *The ratio of positive responses to e-mails shows the same pattern as the overall response rate.* Reputation *nudging has a highly significant, positive effect on response rates compared to the baseline. We also find suggestive evidence for* Status *nudging increasing response rates compared to a* Neutral *request. Whether* Reputation *nudging is more effective than* Status *nudging is at the borderline of constituting suggestive evidence.*

Support. Fig. 1 also shows that the effect of reputation and status nudging on response rates is robust to counting positive responses only, when using the neutral baseline as the base of comparison (right panel). With smaller effect sizes, we receive 27.3% positive responses in the NEUTRAL baseline and 35.8% in the STATUS treatment ($\chi^2(1) = 4.597$, $p = 0.032$), which constitutes suggestive evidence for an effect. Moreover, we obtain 44.2% positive responses in the REPUTATION treatment, a highly significant, 16.9 percentage point increase from NEUTRAL ($\chi^2(1) = 16.778$, $p = 0.000$). However, ascribing a good reputation to the broker yields a response rate that is at the borderline of constituting suggestive evidence when comparing it to the response rate when ascribing high status ($\chi^2(1) = 3.854$, $p = 0.050$).

Taken together, we find that status and reputation nudging positively affect both overall and positive response rates. However, we find that reputation nudging works significantly better than the neutral request for both overall responses and positive responses, whereas we only find suggestive evidence for status nudging having the same effect. Table A3 in the appendix gives an overview of all corresponding p-values, comparing response rates across treatments.

3.2. Location and company size

In a next step, we compare the response rates in **rural** with those in **urban areas**, once for overall responses and once for positive responses only.[10] We are particularly interested in this difference since the number of insurance brokers in urban areas is high, whereas the number in rural areas is low – sometimes only a handful for an entire region.

Most of our observations stem from urban areas: we sent 664 requests (82.2%) to insurance brokers in urban areas, yet only 144 (17.8%) to brokers in rural areas. Table A4 in the appendix gives a detailed overview of the absolute number of responses and response rates across urban and rural areas.

Result 3. Reputation *nudging positively and significantly affects response rates in both* ***urban*** *and* ***rural*** *areas. At the same time,* ***status*** *nudging positively affects response rates in* ***urban*** *areas only. These results hold both for the set of all responses and for the subset of positive responses.*

Support. Fig. 2 gives an overview of the results. Regarding overall responses, we find similar patterns for both urban and rural areas as observed in the full sample. Treatment NEUTRAL yields the lowest response rate, followed by STATUS and by REPUTATION. Yet compared to the neutral baseline, we only find suggestive evidence for status nudging increasing both the overall and the positive response rates in urban areas (overall responses: $\chi^2(1) = 5.045$, $p = 0.025$; positive responses: $\chi^2(1) = 3.863$, $p = 0.049$). At the same time, reputation nudging significantly increases both the overall and the positive response rates in both rural and urban areas (overall responses: $\chi^2(1) = 8.442$, $p = 0.004$ for rural areas; $\chi^2(1) = 14.908$, $p = 0.000$ for urban areas; positive responses: $\chi^2(1) = 9.231$, $p = 0.002$ for rural areas, and $\chi^2(1) = 9.159$, $p = 0.002$ for urban areas). Table A5 in the appendix gives a detailed overview of all p-values comparing treatments across urban and rural

[10] We obtain data about which municipality belongs to either a rural or an urban area from the German "*Bundesinstitut für Bau-, Stadt-, und Raumforschung*", which is an administrative unit of the German federal government. We use the website https://www.suche-postleitzahl.org/downloads to associate postcodes with municipalities, relying on data from OpenStreetMap Contributors.

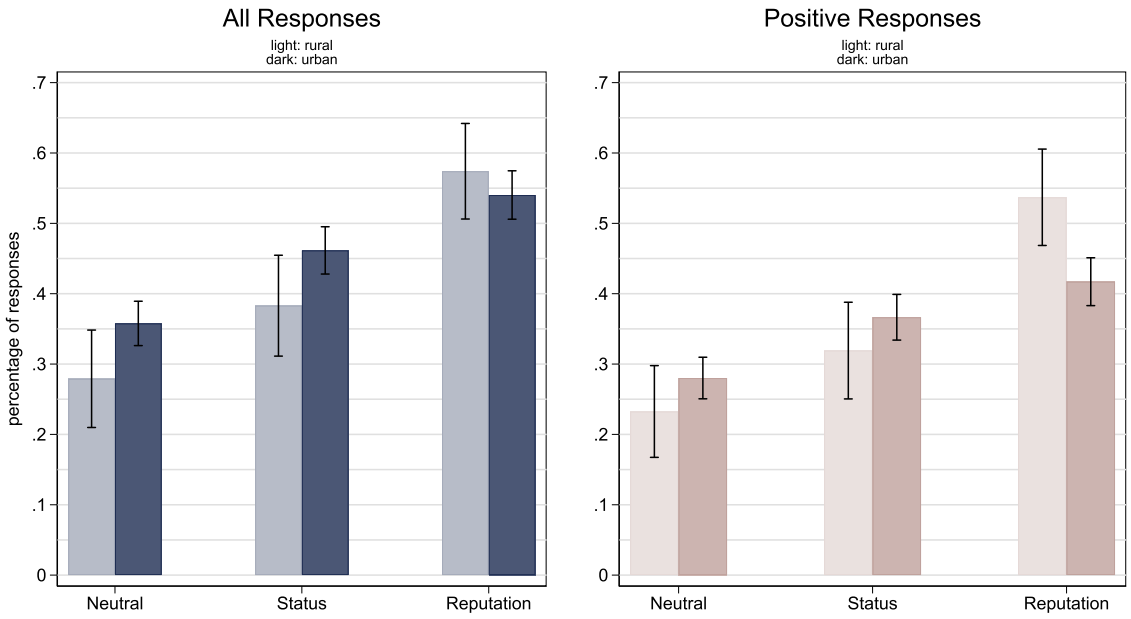

Fig. 2. Response rates across treatments for (i) all responses, and for (ii) positive responses only; per geographical area: This graph shows overall and positive rates of response to e-mails requesting an appointment where the student would ask the insurance broker to answer a few questions. The left panel shows all responses, whereas the right panel shows positive responses only. Responses for rural areas are depicted in lighter shading. Error bars indicate standard errors of the mean.

areas.

Overall, we find evidence that there are differences in how these nudges work in urban and rural areas. In urban areas, the overall effects are less pronounced in terms of the effect sizes of our nudges. However, since the sample size for rural areas is relatively small overall – only 144 out of the 808 insurance brokers in our sample were located in rural areas, and only 54 e-mails were sent to brokers in the reputation nudging treatment – we do interpret these results with caution.

Turning to response rates across **company sizes**, we categorize companies as "small" if the legal requirements for equity capital are either that there is no minimum equity capital, or only a token amount (such as for a "Kommanditgesellschaft", a limited partnership with no minimum required share capital; or a "Unternehmergesellschaft (haftungsbeschränkt)", an entrepreneurial company with limited liability and a minimum required share capital of 1 €). Additionally, what we define as "small companies" are all company types that are not legally required to pay sales tax (under certain conditions), and as such are also defined as small businesses by German corporate law. What we define as "large companies" are company forms with a minimum share capital of 25,000 €, such as a "GmbH" ("Ltd").[11] We include a detailed overview of our categorization in appendix A1. Overall, we categorize 416 out of 808 insurance brokers as being employed in a large company (51.5%), with similar proportions of small and large companies across treatments (52.0% large companies in NEUTRAL, 51.5% in STATUS, and 50.9% in REPUTATION).

Result 4. *For **large** companies,* Reputation *nudging significantly positively impacts overall and positive response rates compared to the* Neutral *baseline. We furthermore find suggestive evidence for a positive effect of* Status *nudges on overall responses, but not on positive responses. For **small** companies, we find suggestive evidence that* Reputation *nudging increases response rates compared to the* Neutral *baseline for overall responses, but again not for positive responses.* Status *nudging has no significant effect, neither on overall responses nor on positive responses.*

Support. Fig. 3 shows the response rates for all response types (left panel) and for positive responses (right panel) across small and large companies. For large companies (dark bars), we find suggestive evidence for status nudging increasing overall response rates by 11.96 percentage points compared to the neutral baseline ($\chi^2(1) = 4.3624$, $p = 0.037$). Status nudging does not significantly increase response rates in terms of positive responses ($\chi^2(1) = 3.6186$, $p = 0.057$). Reputation nudging has a more pronounced and highly significant effect, with an increase of 25.49 and 25.11 percentage points for overall responses and positive responses, respectively ($\chi^2(1) = 18.4630$, $p = 0.000$ – all responses; $\chi^2(1) = 19.0143$, $p = 0.000$ – positive responses). For small companies, status nudging does not yield significantly higher response rates, neither for all responses ($\chi^2(1) = 1.8350$, $p = 0.176$), nor for positive responses ($\chi^2(1) = 1.2773$, $p = 0.258$). We find suggestive evidence for reputation nudging yielding a higher overall response rate, with an increase of 14.46 percentage points ($\chi^2(1) = 5.4979$, $p = 0.019$), but this effect loses significance when counting positive responses only ($\chi^2(1) = 1.9189$, $p = 0.166$). Table A5 in the appendix gives a detailed overview of all corresponding p-values, comparing treatments across small and large companies.

Overall, we observe that the effects of nudges have the greatest effect on insurance brokers employed by large companies, whereas there is little to no effect for brokers employed by smaller companies. The graphical evidence suggests that the response rates were considerably higher in the neutral condition (i.e., in the absence of any nudge) for brokers employed by small companies, which is an interesting observation in itself. However, this is only a directional statement about an effect, not backed up by statistical significance ($\chi^2(1) = 2.6391$, $p = 0.104$ – all responses; $\chi^2(1) = 1.8363$, $p = 0.175$ – positive responses).

Table 1 presents an overview of the results of OLS regressions as a robustness check for our analyses presented above, including those regarding location and company size. We use responses overall (columns 1a–3a) and positive responses (columns 1b–3b) as the dependent

[11] We obtain the data about the company form a particular insurance broker belongs to from the database of the register for insurance brokers ("Vermittlerregister"), which is provided by the German Chamber of Commerce ("Industrie- und Handelskammer"), accessible via https://www.vermittlerregister.info/.

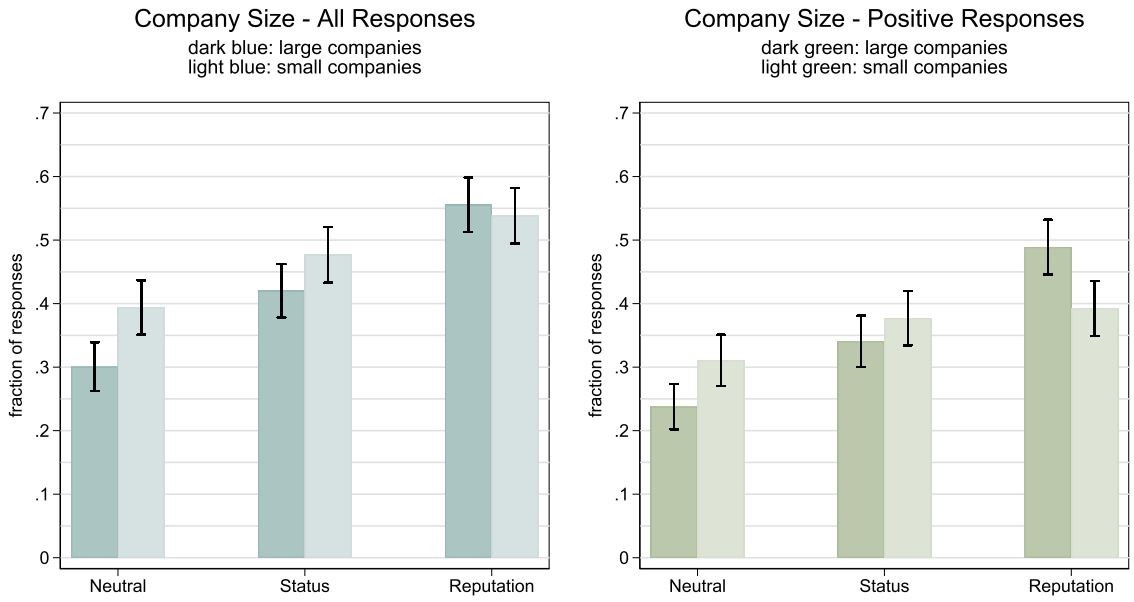

Fig. 3. Response rates across treatments for (i) overall responses, and for (ii) positive responses; per company size: This graph shows overall and positive rates of response to e-mails requesting an appointment where the student would ask the insurance broker to answer a few questions. The left panel shows responses overall, the right panel shows positive responses only. Responses for large companies are depicted in darker shading. Error bars indicate standard errors of the mean.

Table 1
OLS Estimation Results – Response Rates: This table outlines OLS estimates for the response rates calculated as a fraction of responses overall and of positive responses, across several specifications. Robust *t*-statistics are given in parentheses. The last line displays the *p*-values of post-estimation Wald-tests for the coefficients of STATUS and REPUTATION being equal. Stars indicate significance levels, *** p < 0.001, ** p < 0.005, * p < 0.05.

	All responses			**Positive responses**		
	(1*a*)	(2*a*)	(3*a*)	(1*b*)	(2*b*)	(3*b*)
STATUS	0.102*	0.104*	0.121*	0.085*	0.086*	0.104
	(2.445)	(2.248)	(2.026)	(2.147)	(1.963)	(1.836)
Reputation	0.202***	0.183***	0.237***	0.169***	0.137**	0.221***
	(4.803)	(3.906)	(3.930)	(4.145)	(3.033)	(3.875)
Rural		−0.079	−0.082		−0.048	−0.050
		(−1.041)	(−1.069)		(−0.670)	(−0.704)
Rural x status		0.000	0.002		0.000	0.002
		(0.001)	(0.017)		(0.002)	(0.018)
Rural x Reputation		0.112	0.118		0.168	0.181
		(1.051)	(1.091)		(1.608)	(1.739)
Small_business			0.095			0.074
			(1.648)			(1.365)
Small_business x Status			−0.037			−0.037
			(−0.439)			(−0.458)
Small_business x Reputation			−0.114			−0.179*
			(−1.356)			(−2.204)
Constant	0.345***	0.358***	0.313***	0.273***	0.280***	0.245***
	(12.025)	(11.326)	(7.817)	(10.136)	(9.467)	(6.570)
N	808	808	808	808	808	808
R^2	0.028	0.030	0.034	0.021	0.025	0.031
$p - value$[a]	0.0216	0.1024	0.0670	0.0496	0.2836	0.0566

[a] This line displays the *p*-values of post-estimation Wald-tests for the coefficients of STATUS and REPUTATION being equal.

variables. We report *t*-statistics in parentheses.[12] STATUS and REPUTATION are binary variables, indicating the respective treatments. The variables RURAL and SMALL_BUSINESS are indicators for insurance brokers being located in a rural area or being employed with a small company, respectively.

Across all specifications, REPUTATION nudging significantly increases response rates compared to the neutral baseline. We find an increase in the probability of receiving an answer of at least 18.3 percentage points relative to the NEUTRAL baseline ($p < 0.001$) for responses overall, and of at least 13.7 percentage points for positive responses ($p < 0.005$). We find suggestive evidence for STATUS nudging increasing the probability of receiving any answer by at least 10.2 percentage points for all responses ($p < 0.05$). However, as observed in the previous results, there is suggestive evidence for STATUS nudging increasing response rates for positive responses in models 1b and 2b ($p < 0.05$) only, not accounting for company size. For positive responses, we find suggestive evidence for a negative interaction effect of an insurance broker being employed with a small business and receiving a reputation nudge ($p < 0.05$). These findings largely confirm our previous results, and additionally show that there is no significant impact of

[12] Since the recorded response is a binary variable, we also conduct Logit regressions. These are included in Table A7 in the appendix. Since the results do not change qualitatively, we only present OLS regressions in the main text for easier interpretation.

location or company size alone on response rates.

Considering the differences in treatment effects between STATUS and REPUTATION nudging, post-estimation Wald-tests across overall and positive responses yield suggestive evidence for REPUTATION nudges working better ($p < 0.05$) than STATUS nudges in the baseline model, in which we do not control for location and company size.

3.3. Follow-through rates across treatments

In a last step, we present a comparison of the fractions of actual survey responses across treatments, which we call the follow-through rate for initial e-mail requests of the student.[13] The student sent a survey link to the insurance broker if the broker replied in the affirmative to the initial request. We study the responses to analyze whether brokers actually followed through on their initial, positive response of providing their expertise, corroborating the initial act of reciprocity.

However, the results that follow should be interpreted with caution. Some of the brokers replied to the survey invitation indicating that they would be willing to meet in person or have a phone conversation, but that they would not (mainly due to cyber-safety concerns) click external links. Our rate of positive responses is thus a conservative proxy for brokers' true willingness to help the student. In general, we expect brokers' cyber-safety concerns to be orthogonal to our treatment variations, such that this conservatism will not affect our treatment effects. In addition, we analyze the survey responses as a fraction of overall requests sent as well as as a fraction of positive responses. In case that the reasons to not follow through with an initial affirmative response are impacted by a treatment effect, we would expect to find significantly different fractions of survey responses as a fraction of positive responses.

Result 5. *We find suggestive evidence that* Reputation *nudging increases the fraction of completed survey responses compared to the neutral baseline. We do not find evidence that* Status *nudging increases response rates.*

Support. Fig. 4 shows the survey response rates as a fraction of the total number of requests sent (left panel) and as a fraction of positive responses (right panel). The survey response rate is 17.1% of all requests sent across treatments, with 13.8% in the NEUTRAL baseline, 16.0% in STATUS, and 21.5% in REPUTATION. STATUS nudging does not yield a significantly higher "follow-through" rate compared to the neutral baseline ($\chi^2(1) = 0.5302$, $p = 0.467$), but we find suggestive evidence that REPUTATION nudging does (7.7 percentage points higher than in the neutral baseline; $\chi^2(1) = 5.5066$, $p = 0.019$).

Analyzing survey responses as a fraction of positive responses to the initial request, we find that there are no additional effects of STATUS or REPUTATION nudging on the follow-through rate compared to the NEUTRAL baseline ($\chi^2(1) = 0.5829$, $p = 0.445$ – NEUTRAL vs STATUS; $\chi^2(1) = 0.1437$, $p = 0.705$ – NEUTRAL vs REPUTATION). The average survey response as a fraction of positive responses to the first request across treatments is 47.6%, with 50.7% in the NEUTRAL baseline, 44.8% in the STATUS treatment, and 47.9% in the REPUTATION treatment. Ultimately, one interpretation of these results is that nudging effects persist: the fraction of brokers responding in the affirmative differs across treatments, but once a broker responds in the affirmative—either out of a general predisposition towards answering, or because of an effect triggered by one of our treatments—there are no significant differences across treatments.

However, we want to point out that this null-effect in the follow-through rates as a fraction of respondents with positive responses could also be explained by a different mechanism as outlined in the following. Imagine that there are two different types of respondents, type A and B. We define type A as a respondent who would always respond in the affirmative. The fraction of type A respondents is then 27.3% (the response rate of positive responses in our treatment NEUTRAL), and is identical across treatments. Then type B respondents would be those respondents who respond in the affirmative because of the nudge - and therefore are the additional respondents that each treatment attracts, defined by the difference in the overall fraction of positive responses less the fraction of type A responses. In the STATUS treatment, we therefore have 35.8% - 27.3% = 8.5%, and in the REPUTATION treatment, we have 44.2% - 27.3% = 16.9%.

Then we can think about two possible cases that we unfortunately cannot disentangle with our design. In the first case, both type A and B react in the same way to the nudges when it comes to their follow-through rate - once they have replied in the affirmative, an identical fraction of each type is following through with the response. In the second case, type A respondents react to the nudge in a way that the treatments increase their likelihood of filling out the survey, whereas type B respondents are less willing to fill out the survey. We cannot say which of those two cases might be the case in our study.

Overall, due to the small sub-sample sizes, we want to be cautious with further interpretations and leave this to further research.

As a further robustness check, we compare the overall amount of time spent on the survey across treatments, yet again find no significant differences. We present a graph and analyses of survey timing in Fig. A1 in the appendix.

Overall, it seems that once brokers agreed to help the student, there is no additional treatment effect on the actual willingness to follow through with this initially offered help, but that the willingness to help is potentially impacted by a reputational nudge.

Table 2 presents an overview of the results of OLS regressions where we also include location and company size as explanatory variables, counting survey responses as the dependent variable. We analyze follow-through rates both relative to total requests sent (columns 1a–3a) and relative to the number of positive responses (columns 1b–3b). We include *t*-statistics in parentheses.[14] STATUS and REPUTATION are binary variables, indicating the respective treatment. Both RURAL and SMALL_BUSINESS are indicator variables for the insurance broker being located in a rural area/employed by a small company.

The regression results mainly support the results presented above – across the specifications counting survey responses as a fraction of all requests sent out, we find suggestive evidence that REPUTATION nudging increases survey response rates in contrast to the NEUTRAL baseline for the baseline model (with treatments as controls only) and the full model (including both location and company size as well as interaction effects with treatments). Including a REPUTATION nudge in the initial request increases the likelihood of actually receiving a survey response by 7.7 percentage points in the baseline model ($p < 0.05$), and by 10.1 percentage points in the full model ($p < 0.05$). STATUS nudging does not have a statistically significant effect on the follow-through rate in any model.

Considering survey responses as a fraction of affirmative replies to the initial request, we do not find a significant effect of any of the explanatory variables, corroborating our previous findings.

4. Discussion and conclusion

In this paper, we report on a field experiment with 808 insurance brokers operating in a credence goods market. Our aim was to analyze the effects of non-monetary compliments referring to status and reputation (i.e., status and reputation nudging) on insurance brokers'

[13] We count a survey response as positive if the broker clicked on the link and started filling in the survey. The actual contents of the survey were only relevant for the student's thesis and are therefore not discussed in the present study.

[14] Since the recorded response is a binary variable, we also conduct Logit regressions, which we present in Table A8 in the appendix. Since the results remain qualitatively unchanged, we only present OLS regressions in the main text.

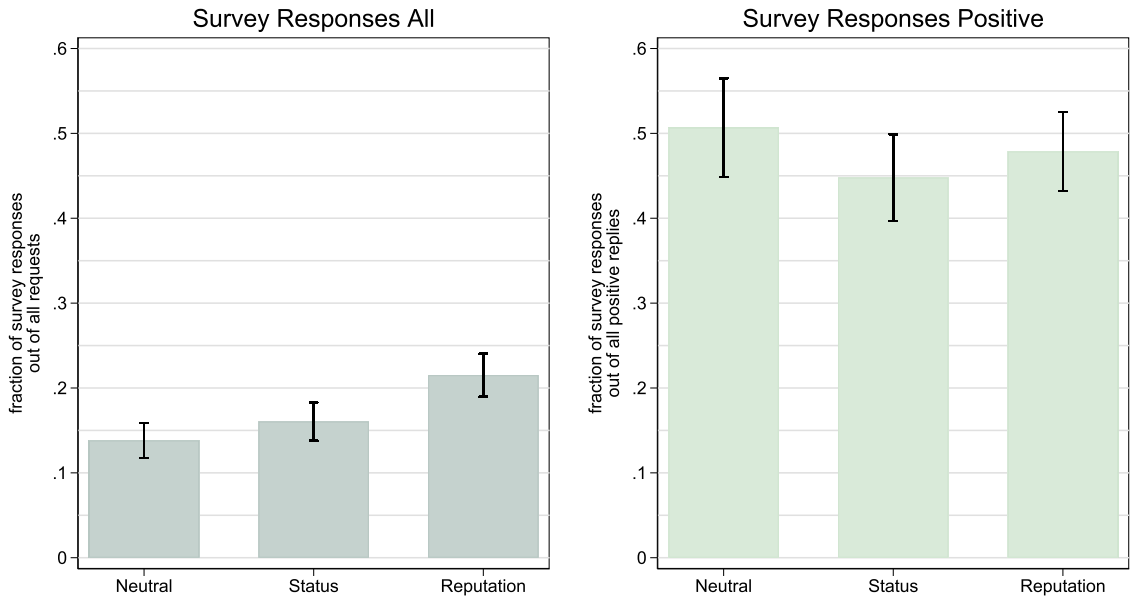

Fig. 4. Rates of survey responses across treatments as a fraction of all responses and of positive responses: This graph shows the fraction of survey responses (the student sent out an e-mail with a link to a general survey after the insurance broker had replied in the affirmative to the initial request) out of all requests (left panel) and of the positive responses (right panel). Error bars indicate standard errors of the mean estimate.

Table 2
OLS Estimation Results – Survey Responses: This table outlines OLS estimates for overall survey responses and for positive responses only, across several specifications. We provide robust *t*-statistics in parentheses. The last line displays the *p*-values of post-estimation Wald-tests for the coefficients of STATUS and REPUTATION being equal. Stars indicate significance levels, *** $p < 0.001$, ** $p < 0.005$, * $p < 0.05$.

	All responses			**Positive responses**		
	(1*a*)	(2*a*)	(3*a*)	(1*b*)	(2*b*)	(3*b*)
Status	0.022	0.034	0.031	−0.059	−0.023	−0.078
	(0.727)	(0.996)	(0.694)	(−0.760)	(−0.276)	(−0.658)
Reputation	0.077*	0.066	0.101*	−0.028	−0.015	−0.062
	(2.347)	(1.833)	(2.047)	(−0.377)	(−0.182)	(−0.552)
Rural		0.002	0.002		0.108	0.100
		(0.028)	(0.030)		(0.639)	(0.584)
Rural x Status		−0.067	−0.067		−0.243	−0.242
		(−0.866)	(−0.865)		(−1.127)	(−1.114)
Rural x Reputation		0.054	0.062		−0.102	−0.085
		(0.614)	(0.706)		(−0.510)	(−0.419)
Small_business			−0.004			−0.147
			(−0.084)			(−1.261)
Small_business x Status			0.007			0.097
			(0.111)			(0.628)
Small_business x Reputation			−0.076			0.062
			(−1.158)			(0.412)
Constant	0.138***	0.138***	0.140***	0.507***	0.492***	0.574***
	(6.628)	(6.070)	(4.602)	(8.731)	(7.856)	(6.412)
N	808	808	808	288	288	288
R^2	0.007	0.010	0.014	0.002	0.007	0.016
$p - value$[a]	0.1066	0.3989	0.1646	0.6565	0.9167	0.8711

[a] This line displays the *p*-values of post-estimation Wald-tests for the coefficients of STATUS and REPUTATION being equal.

reciprocal behavior, measured by the response rates following e-mail requests.

Our findings show that reputation nudging significantly increases the response rates to e- mails, and this effect is robust to variations in our analysis approach. We find suggestive evidence for status nudging being effective, but with smaller effect sizes than for reputation nudging. Additionally, we find that a general, positive impact of reputation nudging on response rates holds when studying responses overall and when studying positive responses alone. Our results furthermore show that the observed patterns remain qualitatively unchanged when we split the sample into urban and rural areas. We also find that reputation nudging significantly increases response rates for insurance brokers employed by large companies, and suggestive evidence for such an effect in small companies. Analyzing the "follow- through" rate, which we define as a survey response following an affirmative response to the student's initial request, we find that reputation nudging is a robust and significant predictor for an increase in such responses.

Nonetheless, our findings warrant some discussion. We cannot provide much information about the mechanisms driving the effects of status and reputation nudging. We think this is an important avenue for future research to draw further generalizations and implications from our results. In the following, we present three potential channels for our treatment differences.

First, addressing brokers' reputation (and, to a lesser degree, brokers' status) in the e-mail request may have the effect of reducing social distance, i.e., "the emotional proximity induced by the situation"

(Charness & Gneezy, 2008, p. 30). Hoffman et al. (1996)) and Charness and Gneezy (2008), for example, find such a reduction to induce increased kindness. In our experiment, this means that the social distance between the student and the insurance brokers may have been reduced in the reputation treatment, since the student references the people who recommended the broker ("relatives and friends"). These recommending persons would then know both sides of the interaction, the sender of the request and the broker. The recommending persons are thus mutual acquaintances, reducing the perceived social distance from the broker's perspective.

Second, guilt aversion (Battigalli & Dufwenberg, 2007; Charness & Dufwenberg, 2006; Ellingsen et al., 2010) could be another channel (partly) driving our results. The concept of guilt aversion is connected to the beliefs of the insurance brokers. Translated to our experiment, it would imply that brokers feel guilty whenever their behavior does not live up to their beliefs about the student's expectations. Similar to the social distance argument, we cannot exclude that guilt aversion potentially has differential effects in our treatments. It could arguably be the case that brokers in the reputation treatment, given the information that they had been recommended by the student's relatives and friends, have a different belief about the student's expectations to actually receive help than in the status treatment. This would be based on the argument of a reduced social distance inducing an even higher level of guilt in case that the broker did not comply with the request, leading to an effect pointing in the same direction as our observed treatment effects.

Third, external factors, such as social pressure, social image, or self image concerns could be driving our results. An extensive body of literature in the realm of altruistic and charitable behavior has shown that these external factors can motivate actions that appear to be intrinsically prosocial (see Malmendier et al., 2014, for a discussion). Social pressure as a driver of reciprocity seems particularly relevant for our reputation treatment, where we claim that the broker was recommended by the majority of the student's relatives and friends. One obvious assumption the broker can make here is that the relatives and friends are current clients, which creates social pressure to respond to the request. In addition, self image as well as social image concerns can play a role: individuals care about how their actions are aligned with their own intrinsic values, but also about their actions as an external signal (see Bénabou & Tirole, 2003, for example). Taken together, all of those external factors can drive reciprocal behavior. With our design, we cannot measure the extent to which each of the factors impacts the decision to respond to the e-mail request, and whether there is a difference as to which factors are the main drivers across treatments. While we are only interested in analyzing observed levels of reciprocity as measured in response rates, we concede that exploring the drivers of reciprocity is an interesting avenue for future research.

In addition to not being able to identify the underlying mechanisms that potentially drive our results beyond the pure effect of status and reputation, we can also not rule out that brokers regard this situation completely independently of a potential (future) business interaction. With our design, we tried to make it as clear as possible that the student is solely interested in expert information that helps him for his thesis, but that he does not intend to purchase insurance. However, in our reputation treatment, we mention friends and relatives recommending the particular broker, who are thus indirectly suggested to be current customers. Even though the broker might indeed not expect any future business relation with the student, we cannot rule out that the broker responds in the affirmative to the reputation nudge to avoid negative feedback from the student to his relatives and friends, which might negatively impact the ongoing business relationship with these relatives and friends. This effect could partly be driving our treatment differences. However, one could also argue that this is part of what constitutes the effect of reputation in general: reputation is an informative signal about quality, performance, or actions (Ertug & Castellucci, 2013; Jensen & Roy, 2008; Washington & Zajac, 2005), and usually serves as a proxy for future behavior (Jensen & Roy, 2008) – even more, reputation carries information about which products or services one may want to buy (Fombrun, 1996). These effects are by nature linked to business interactions that have a potential monetary impact on a broker's income.

To conclude, due to our field setting, we cannot measure the role that either of the potential explanations we outlined may play in driving our major findings. However, we are confident that our results are informative about the overall effect of status and reputation nudging on reciprocal behavior of insurance brokers. In particular, we believe that brokers' preferences for reciprocal behavior, together with the credence goods properties of the environment, serve as the major drivers of our findings.

In the insurance sector, the quality of the insurance and of other services sold are not verifiable at the point of purchase, and in many cases also not at a later point while the business relation remains ongoing. An objective criterion for quality is unavailable due to the nature of the good, which leaves a broker's status and reputation as a signal to customers and makes those concepts salient for employees of the industry in general. While not explicitly including the prospect of such a business interaction in our design by only asking for a broker's expertise for a student's thesis, we have reason to believe that the effects of status and reputation nudging, as prevailing in described business interactions, are still the main drivers of our observed effects. We formulated the e-mails such that the recipients are explicitly addressed in their role and particular expertise as brokers. With that, we directly connect to the related literature, which has shown that a preference for high status, even if not connected to a particular business interaction, significantly impacts behavior of employees in the finance industry (see Kirchler et al., 2018, for example).

That the concepts of status and reputation are of major importance in credence goods environments is further backed up by the related literature: In the finance sector in general, competition for status is a driver of different observed behavioral patterns (see from Kirchler et al., 2018, 2020, for example). Similarly, the importance of reputation in a credence goods environment has been documented in a variety of studies (see from Ely & Välimäki, 2003; Ely et al., 2008; Grosskopf & Sarin, 2010; Kreps & Wilson, 1982, for example).

While we want to remain cautious to not generalize our findings, we still think that our findings have interesting implications for real-world interactions. With an information advantage on the broker's side that can be exploited at the client's expense, it is important to explore strategies for mitigating any detrimental outcomes. In our design, appealing to the broker's status and, more so, reputation, leads to an increase in reciprocal behavior compared to a neutral request. If this effect of reciprocal behavior is a consequence of attributing social labels with which the broker identifies and then acts in accordance to (Cornelissen et al., 2007), this could also be a valuable tool for clients in business interactions. Appealing to the broker's reputation in a consultation meeting might help to trigger reciprocal behavior: in this case, we expect that the broker reciprocates by acting less in their own interest, which can mitigate adverse selection problems. Undoubtedly, further research aimed at testing these effects is necessary in order to make a less speculative claim about how our findings manifest in actual social interactions.

Overall, we make two contributions to the literature. First, we explored the effects of an appeal to status and reputation on response rates by asking brokers for their expert insights on specialist issues. Second, we conducted a natural field experiment with insurance brokers in their natural environment, which gives us the opportunity to analyze status- and reputation- related behavior in a financial credence goods market "in the wild". Hence, the findings underline the importance of experts' status and reputation signalling even in an environment with no immediate business interaction and demonstrate that simple nudges trigger more reciprocal behavior among experts.

Data availability

Data will be made available on request.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.socec.2023.102031.

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