Can you deny more if you get less?

An experimental study on the role of incentives

in the acceptance of denial

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Abstract

The Strategic Speaker Theory (SST) argues that utility maximization is a crucial component of verbal communication. Lee and Pinker (2010) say that the strategic speaker calculates her non-monetary costs and benefits out of the verbal communication and then prefers to use indirect speech instead of direct speech due to the higher acceptance level of her denial with the indirect speech. In my thesis, I argue that incentive and people's awareness regarding the incentive also play a role in accepting denial. I test this hypothesis by preparing 8 different scenarios with stories of protagonists denying a claim and asking participants how plausibly they would accept the denial. 507 participants were recruited in the main study. Any significant result could not be detected regarding the effect of the incentive on the acceptance of denial even though the participants responded clearly to the denial condition. This study brings other questions about whether people are blind to the incentives or just prefer to stay ignorant since the incentive is about the third parties but not themselves.

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Introduction

Utility maximization theory is widely used in economics, psychology, cognitive and behavioral sciences to explain how an individual decides and acts under different circumstances to satisfy his/her/their needs at the highest level. The theory argues that the rational individual is a strategic decision-maker who makes decisions to have the highest satisfaction, also called utility, after calculating the possible costs and benefits of the situation.

The Strategic Speaker Theory (SST) argues that utility maximization is also an important component of verbal communication. The theory of the strategic speaker is focused on the speaker and defines indirect speech as a tool of expression, which is a result of the utility maximization process. According to the theory, before the speaker decides whether to use direct or indirect speech, the speaker first calculates the possible emotional, physical or other types of costs and benefits which the hearer might cause. The theory questions how a strategic speaker should communicate things in some specific strategic context. Lee and Pinker (2010) answer this question by arguing that individuals prefer to convey what they mean indirectly because it allows for a higher level of plausible deniability than direct speech since indirect speech creates uncertainty in the hearer's mind. When the hearer feels puzzled about the main implicature of the speaker's utterance, the hearer tends to accept the speaker's denial about the implicature at a higher level compared to a denial which is made after a direct speech.

This thesis aims to challenge the assumption of higher deniability of indirect speech by arguing that the plausibility of a denial depends on multiple factors, not only the direct-indirect speech distinction. The study suggests that one of the important factors that renders a claim deniable is the speaker's incentive in making that claim. I argue that when the incentive of the speaker to deny changes in each scenario, the acceptance level of plausibility of denial will also change since role of incentives and how they affect human behavior are still among the hot topics discussed in different disciplines including economics and psychology. At the most basic

understanding, classical economics approaches the incentives mostly as a tool that directly affects the consumer's and producer's demand and supply preferences. Besides economics, psychology defines the role of incentive as a mechanism that can motivate an individual to behave in a certain way if the incentive is offered or understood as a reward while also can cause demotivation if it is perceived as a punishment by the individual (Baid, 2020, p. 146). Therefore, experimental research will be conducted to show the plausibility of denial also depends on the incentive that the speaker had to have meant what the speaker now denies.

To test this hypothesis, I prepare different scenarios, including the story and denial parts, with stories of protagonists denying a claim. First, I will run a norming study to test the scenarios to check how the intended implicature and incentive condition work. In the norming study, the dependent variable will be an ordered categorical variable with 4 categories while the incentive condition, age and gender are the independent variables. I will use ordered logistic regression for the analysis of the experiment data. Then, I will select the best scenarios regarding the statistical analysis results and then test them in the main study. During the main study, I will change the conditions in each scenario so as to vary the incentive the speaker has to make the denied claim. Participants in my experiment then will assess to what extent the denial is plausible. The dependent variable will be a non-ordered categorical variable with 5 categories while incentive condition, denial condition and gender are the independent variables. I will use the multinomial logistic regression to analyze the data from the main study.

I will test the hypothesis among 261 participants in the norming study and 507 in the main study. Each participant will be given an amount of money as incentive calculated according to the expected response time of the survey.

1 Literature Review

Verbal communication is one of the most highly specialized human abilities when drawing a distinction between humans and the communication of other animals. According to Sperber, Heintz, Mascaro and Mercier (2010), verbal communication among humans requires a speaker who aims to be understood and to direct the listener's thoughts or actions in the way the speaker desires and the listener, who is able to understand the direction independently of whether accepting the validity of direction. The speech itself also requires information-processing on both sides. The necessity of information-processing is worth underlining because, without cognition, the speaker's words and sentences would be just noises for the listener's ears, and language would work just like a grammatically well-designed mathematical formulation (Sperber & Wilson, 1986, p. 174). With every letter turned to words, sentences and speech are a naturally evolved process of human communication and are used to encode the meaning and information to be transferred from speaker to listener.

In Relevance Theory, which defines speech as both a verbal method of communication and cognition, Wilson (2016) claims that when the speaker starts to speak, the speaker's words are not the only input that the listener is processing. The listener processes the entire context through memories, beliefs, doubts and many others triggered by the utterance or all other possible inputs which exist at the moment as an external stimulus or internal impressions of the listener.

The Relevance Theory distinguishes speech types between direct and indirect speech. When the speaker uses the language directly, she/he/them clearly explains what they mean and prefers not to leave any doubt about what is intended to be said. However, when they prefer to speak implicitly, they use an inefficient way of speaking which puzzles the hearer about the possible meanings of speech (Sperber, Heintz, Mascaro, & Mercier, 2010, 380).

After the distinction between direct and indirect speech, the reasons behind using indirect language instead of direct language are defined in several different ways. In The Strategic Speaker Theory (SST), Lee and Pinker (2010) argue that before the speaker makes the offer to the audience, the speaker calculates the possible costs and benefits which depend on the listener type. For one type of listener, communicating the offer is costly while for another type of listener, it is beneficial. For instance, offering a bribe is costly if the audience rejects and condemns bribing, while it can be beneficial if the audience accepts the bribe. Thus, the offer can be made, yet also denied depending on the audience type (e.g., willing to be bribed or not). Due to the uncertainty of the listener type, indirect communication becomes the optimal strategy for the speaker because it is made deniable. This theory clearly identifies a class of strategic situations where choice concerns how to communicate, and uncertainty concerns the audience type. It makes, however, psychological assumptions about what type of communication can be plausibly denied, and what type of communication cannot. More precisely, it assumes that indirect communication is more deniable than direct communication

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2 Studies

2.1 Structure of the Scenarios

Each scenario has a specific structure designed to test specific conditions by including the conditions to the scenario or excluding the conditions from the scenario. The main structure of scenarios consists of two parts, story, and denial.

The story part is the first part where the scenario starts with the background information about the speaker and the hearer regardless of the condition and explains the situation between them and why they needed to have the following conversation. This part is also the part that includes the information related to the incentive condition. The story with the incentive slightly differs from the story without the incentive. The speaker's and hearer's names do not change or the situation they are involved in stays similar to each other in both versions. The only difference is that the situation in the incentive version is slightly manipulated to create uncertainty about the speaker's intention while she is answering the hearer's question. After the background description and involving either incentive or non-incentive condition, the part where the hearer asks a question and the speaker answers it with an indirect speech gives the speaker the chance of claiming that she meant an alternative implicature instead of the intended implicature the hearer understood. The scenario called "Assignment," one of the scenarios tested in the main study, follows the explained structure. In the non-incentive version of the scenario, it is explained that Mark and Paul take the same course and they are doing the assignment together since they are groupmates. The Assignment without incentive is ;

"Mark and Paul take the same course and are currently working on a group assignment. Students will get the highest grade if their group performs in the top 5%.

Mark and Paul are in the same group. They know that their group has good chances to end up among the top 5%, and both are very motivated. Mark feels confident about all answers except the last one, which may cost them the top-5% position.

Mark asks Paul:

- *Hi Paul, I worked on the assignment's questions, but I couldn't answer the last one. It's so hard. Do you know the answer?*

Paul answers:

- *That one is too difficult for me."*

In the non-incentive version, Paul answers Mark's question indirectly by saying "*That one is too difficult for me."* which is called the *"target statement"* in this study. This sentence is not a direct answer to Mark's question since it does not clarify whether Paul could solve the last question and it just highlights that also Mark finds the question too difficult for himself. However, participants were expected to understand the intended implicature which is *"I didn't answer the last question."* when they read only the story part of the scenario without reading the denial part.

In the incentive version of the "Assignment" scenario, the story flows in a similar way except for small but important details. This time the story part is;

"Mark and Paul take the same course and are currently working on an assignment. Students will get the highest grade if they perform in the top 5%.

Mark and Paul are doing the assignment individually. They know that they have good chances to end up among the top 5%, and both are very motivated. Mark feels confident about all his answers except the last one, which may cost him the top-5% position.

Mark asks Paul:

- *Hi Paul, I worked on the assignment's questions, but I couldn't answer the last one. It's so hard. Do you know the answer?*

Paul answers:

- *That one is too difficult for me."*

The version with incentive differs only in terms of how they are supposed to complete the assignment, together as group mates and individually. Except for this change, everything is the same for both versions of the scenario. The motivation behind this change is to create an idea of a possibility that can cause Paul to trick Mark about his answer to the last question and Paul might prefer to use indirect speech as a way out of the situation if he needs it. However, also in the version with incentive participants were expected to understand the same intended implicature which is *"I didn't answer the last question."* when they read the story part of the scenario without checking the denial part.

The denial part is the part that comes after the story part in each scenario. This part is designed in order of events. In the first event, the hearer realizes and gets surprised that the occurrence is different than he expected to happen and the speaker acted in a different way than the meaning of the intended implicature which the hearer understood that the speaker actually meant. The second event is that the hearer tells the speaker that he thought that the speaker meant the intended implicature. In the third and the last part of the denial, the speaker denies that she meant the intended implicature and claims that she actually meant an alternative implicature. Each scenario has its own denial part and the denial part is generally the same in both versions of the scenario, version with incentive and without incentive. However, in some scenarios, the denial parts have minor differences between its incentive and non-incentive versions to keep the scenario flowing while the participant reads the denial part after the story part. For example, "Assignment" is one of these stories with minor differences. For the non-

incentive version, the denial part is;

"Mark spent hours thinking about the last question but couldn't find the correct answer. After submitting their assignment, Mark learns that Paul added the correct answer to the last question just before the submission deadline. Thus, since they answered correctly to all questions, their group assignment ranked among the top-5%.

Mark says to Paul:

- *I thought you said that you didn't answer the last question.*

Paul answers:

- *Oh no, I didn't say that. I just meant that since I also could not solve the last question, I asked Jenny for help."*

In the story part of the non-incentive version, Mark and Paul were groupmates and doing the assignment together. In the denial part, Paul added the right answer to the last question right before the submission and their assignment ranked among the top-5% and both of them gained out of the situation. However, Mark and Paul were supposed to complete the assignment individually in the version with incentive and the students who answer all questions correctly would be ranked among the top-5% of the class. The incentive motive here aims to create the possibility of competition between Mark and Paul to be ranked among the top-5% and a reason which can lead Paul to trick Mark. However, it is also thought that the feeling of the competition and the possibility of Paul's desire to eliminate Mark can cause participants to have sympathy for Mark if Paul submits the correct answer only to his assignment and is ranked among the top-5% while Mark cannot solve the last questions, gets a lower grade and is not ranked among the top-5%. Therefore, to avoid the bias which might be caused due to the sympathy effect, the denial part of the version with incentive was manipulated in a way that

Mark was able to solve the question correctly at the last moment and he also was ranked among the top-5%.

"Mark spent hours thinking about the last question but, in the end, managed to answer it. After submitting his assignment, Mark learns that Paul answered all questions correctly including the last one. Since both Mark and Paul answered all the questions correctly, both their assignments ranked among the top-5%.

Mark says to Paul:

- *I thought you said that you didn't answer the last question.*

Paul answers:

- *Oh no, I didn't say that. I just meant that since I couldn't solve the last question, I asked Jenny for help."*

However, these minor differences among the denial parts of both versions do not affect how the speaker makes the denial since the speaker, Paul, denies the intended implicature, *"I didn't answer the last question."* by saying the same alternative implicature, *"I just meant that since he couldn't solve the last question, I asked Jenny for help."* in the denial parts of both versions. Therefore, any of these minor manipulations of the scenarios aim just to balance the participants' understanding of both versions of the scenarios and not to create any favor for any of the characters of the scenario, the speaker or hearer.

All scenarios are written regarding the explained structure of the story and denial part. The reason behind the structure is that during the norming study, only the story part is tested to be sure that participants get the intended implicature as it is expected and to check whether the incentive condition works. The scenarios in which story parts work were selected to be tested

in the main study after they are manipulated regarding the conditions.

2.2 Norming Study

2.2.1 Hypothesis

As it was mentioned in the previous part, the norming study aims to select the best scenarios to be tested in the main study. The term "best" here is defined as the scenario which passes three different tests regarding the comprehension question, implicature question and incentive question.

The first test is applied through the comprehension question which was asked to all participants right after they read the scenario. This question is designed to check whether participants read the scenario carefully enough to answer the question correctly.

The second condition is applied by asking "the implicature question" to the participants under the incentive condition. The aim of the question is to verify the scenarios where more than half of the participants declare that they understood the intended implicature regardless of the incentive type. This hypothesis is important since if more than half of the participants get the same intended implicature from both versions of the scenario, this means that participants' answers are not random. In other words, the effect of incentive on the plausible deniability which is tested in the main study does not result from the different levels of the understanding of the intended implicature caused by the existence or non-existence of the incentive.

The third condition is to test the effect of the incentive condition. This condition is tested through "the incentive question" and used to identify the scenarios where participants are aware that if the scenario is with incentive and the hearer believes the speaker meant the alternative implicature but not the intended implicature, the speaker is better off compared to the scenario with non-incentive.

Scenarios that pass the three stages are accepted as the ones in which participants read carefully, intended implicature works since participants' answers were not random and incentive condition works since the participants answered in a way that the speaker is better off under the incentive condition compared to non-incentive condition.

2.2.2 Experimental Design

The study tests three questions, comprehension, implicature and incentive questions. The comprehension question is used to check the reliability of the answers of the participants and is asked to each participant after they read the scenario and before they answer the implicature or incentive question. The implicature and incentive questions are to check how the answers to these questions change when the incentive condition changes. To make this analysis possible, each scenario was prepared in four different conditions which are the conditions with incentive & implicature question, with non-incentive & implicature questions, with incentive & incentive question and with non-incentive & incentive questions. In the condition with incentive & implicature question, participants only read the scenario with incentive and answer the implicature question while they answered only to the incentive question if the version is with incentive & incentive question this time. The same structure is held for the versions with incentive & incentive questions and with non-incentive & incentive questions.

I prepared 8 scenarios and each scenario is manipulated according to four conditions. During the experiment, participants read only the story part and were randomly assigned one of the four conditions. Each participant read all 8 scenarios with the condition in which s/he was randomly assigned. After they read the story parts of each scenario, participants answered the comprehension question first and then the implicature or the incentive question related to the story part according to the condition type which s/he was randomly assigned.

2.2.3 Participants

261 participants, 163 male, 97 female and 1 other, were recruited through MTurk. 65 participants were assigned to the condition with non-incentive & implicature questions while 67 were assigned to the condition with incentive & implicature questions. These numbers were 63 for the ones with incentive & incentive questions and 66 for the ones with non-incentive & incentive question. The average age of the participants was 38.34 while the youngest one was 20 and the eldest one was 73. During the experiment, the only qualification required of participants was that they are above the age of 18. Identifying documents of the participants were not recorded, and all answers were saved anonymously.

2.2.4 Analysis

Comprehension Question

The first selection method is completed regarding the comprehension question. The comprehension question asks a detail about the scenario to be sure that the participant read the scenario carefully enough to give the right answer. To give a concrete example, both non-incentive and incentive versions of the scenario named "Assignment" start with the sentence of *"Mark and Paul take the same course."* Participants had to answer the comprehension question of *"How do Mark and Paul know each other?"* right after they read the scenario and choose between the same workplace, same course, or same dorm. Answers of the participants who fail to answer this question as *"same course"* are excluded from the data of the related scenario since the wrong answer is accepted as proof that the participant is not careful enough while reading the scenarios and their answers are unreliable.

Implicature Question

The implicature question asks participants as *"When *the speaker* said the *target statement*, did *the speaker* mean *the intended implicature*?"*. Choices for the answer are given as a binary variable which is *"No, *the speaker* did not mean that."* or *"Yes, *the speaker* meant that."*. Therefore, the selection condition for implicature question is set as having the probability of success, which means the probability of saying *"Yes, *speaker* meant *implicature**, should be higher than 50% for each scenario in both its incentive and non-incentive conditions. As a concrete example, the implicature question for the scenario named as Assignment was asked in the following way:

Question: *When Paul said "That one is too difficult for me.", did he mean that he did not answer the last question?*

Answer: *No, he did not mean that. / Yes, he meant that.*

To analyze the answers to this question, the binomial test was used since it is a method to calculate the probability of success for the variables which change between two values, one value stands for the success while the other one represents the failure. In the testing of implicature question, *"Yes, *speaker* meant *implicature*"* was defined as the success and given the value of 1 while *"No, *speaker* did not mean *implicature*"* was accepted as a failure and got the value of 0.

Incentive Question

The third condition is used to identify the scenarios where participants were aware of the incentive factor of the scenario and they thought that the speaker will be better off if s/he did not mean the implicature but meant the alternative. Incentive question is asked to the participants as *"If *the hearer* believes *the speaker* *intended implicature*, will that be*

*good for *the speaker* ?"* with four choices on a Likert scale. These four choices are ranked from 1 to 4 where 1 is for *"It will not be good at all"*, 2 is for "*It will not be very good*", 3 is for *"It will be quite good"* and 4 is for *"It will be very good"*. To give a concrete example, the incentive question in the Assignment was like following:

Question: *If Mark believes Paul did not answer the last question, will that be good for Paul?*

Answer: *it will not be good at all/ it will not be very good/ it will be quite good/ it will be very good.*

The aim of the analysis is to compare the difference in participants' answers regarding the incentive condition of each scenario. Since the incentive question is the ordinal dependent variable and the incentive condition of each scenario is the binary variable, 1 for the version with incentive and 0 for the version with non-incentive, ordered logistic regression was applied to the data. Age and gender are also added to check whether these factors have any significant effect on participants' answers. Female is added as a dummy variable which gets 1 if the participant is female and gets 0 if the participant is male. Age was in discrete terms in the raw dataset. However, the average age was 38.34, so all observations of age were divided into two groups as the ones higher and the ones lower than the average. Therefore, age was also turned into a categorical variable.

The ordered logistic regression model in equation 1 was defined for each scenario regarding the incentive question. *Incentiveq* represents the incentive question as to the ordinal dependent variable. *"sce"* means the variable regarding each scenario.

$$Incentiveq_{sce} = \alpha_0 + \alpha_1\, Incentive_{sce} + \alpha_2\, age\_group_{sce} + \alpha_3\, Female_{sce} \qquad (1)$$

Before running the regression, the model was checked in terms of assumptions of the ordinal logistic regression. The first assumption is to have the dependent variable as an ordered variable

which is the reason why this method was preferred to be applied in this research. The second assumption is to have one or more of the independent variables as either categorical, ordinal, or continuous. In the above-defined model, all Incentive, age_group and Female are defined as the categorical variables. The third assumption is to be sure that there is no multicollinearity between the independent variables. Collinearity diagnostics of the independent variables were tested with the collin command (Bruin, 2006) in STATA and **Table 1** shows the results. Any significant multicollinearity could not be detected between the independent variables in any of the regressions. The proportional odds assumption is the fourth assumption of the ordered logistic regression. This assumption was tested with oparallel command (Buis, 2013) in STATA which is a command coded for the dataset with small samples. Results in **Table 2** show that all scenarios satisfy the proportional odds assumption. After the assumption checks, the Incentive question was regressed for the incentive condition, age group, and female.

2.2.5 Results

To test the first condition, each scenario is analyzed separately regarding the participants' answers to the comprehension question. **Table 3** shows the number of the wrong answers given by the participants to each scenario's comprehension question. According to these numbers, only a few of the participants failed to give the right answer after they read the scenario of Assignment regardless of the condition they were randomly assigned. Also, participants answered mostly right to the comprehension questions of the scenarios called Old Building, Holiday, New Girl, French Dinner and Party. However, the scenario of Beer and especially Blue Dress were the ones which have the highest number of wrong answers. These number of failures were excluded from each scenario's dataset before the analysis of implicature and incentive questions were completed.

As the second condition, the results of the implicature question are shown in **Table 4. Table 4** shows the probabilities of successes, which means the probability of getting "Yes", for each scenario regarding the incentive condition. The selection condition for the implicature question is set as having the probability of more than 50% under both versions of the scenario, incentive and non-incentive. Thus, Party is the only scenario that is discarded regarding the selection process. However, these results also pointed out interesting and unexpected results. The first one is that there is a noticeable difference between the probability of successes under the non-incentive condition and the incentive condition of almost all the scenarios. The second one is that the probability of success under the incentive condition is always lower than the one under the non-incentive condition. Both of these results show that the existence of the incentive condition causes an unexpected decrease in the understanding level of the implicature. Participants tended to say *"No, *speaker* did not mean *implicature*"* more when they sense that the speaker can have an advantage out of the situation. In other words, the incentive factor in the scenario motivated the participants to reinterpret the scenario and think about the possibility of an alternative implicature that is different from the intended implicature even though any sign regarding the alternative implicature was not given in the story part of the scenarios.

As it is explained in the analysis part in detail, the incentive question was tested by running the ordered logistic regression in Equation 1 and **Table 5** shows the results. The selection procedure regarding the incentive question was selecting the scenario where participants answered in a way that the speaker is better off under the incentive condition compared to the non-incentive condition. Thus, the scenarios which have a positive effect on the incentive question when the independent variable of incentive gets the value of 1 were selected to be tested in the main study. The incentive Question (A) part of **Table 5** shows that only half of

the scenarios have significant positive effects on the incentive question when they have the incentive factor. "Assignment", "Holiday", "New Girl" and "Old Building" are the four selected scenarios. Besides the incentive variable, the effect of age and gender were also tested. As expected, age does not have any of the scenarios. However, being a female has an unexpectedly positive effect on the incentive question in two of the scenarios. The unbalanced number of female and male participants might cause this problem since only 97 of the participants were female while 163 of them were male. However, to check whether the gender factor has an effect on the significance of the incentive condition, age and gender were omitted from the model and the equation was analyzed again. As it can be seen in the Incentive Question (B) part of **Table 5**, previously selected scenarios still have a positive and significant effect under the incentive condition. However, gender will be tested again in the main study to see whether being female has a significant effect on the deniability question.

To understand clearly how the incentive condition works/does not work in scenarios, distribution of the scenarios under incentive and non-incentive conditions are plotted in **Figure 1.** I expect to see an opposite distribution trend between the non-incentive and incentive versions of the scenario to claim that the incentive condition works. Each histogram shows the probability of getting the written answer on the x-axis (1 is for *"It will not be good at all"*, 2 is for "*It will not be very good*", 3 is for *"It will be quite good"* and 4 is for *"It will be very good").* Incentive=0 represents the scenario with non-incentive while Incentive=1 is for with incentive. **Figure 1** shows that the selected four scenarios regarding the ordinal logistic regression satisfy this expectation since when the scenario is with incentive people tend to choose higher orders compared to the non-incentive in the four scenarios. However, discarded four scenarios stay stable even though the incentive condition is included.

The results of comprehension, implicature and incentive questions show that "Assignment", "Holiday", "New Girl" and "Old Building" are the best scenarios to be tested in the main study.

2.3 Main Study

2.3.1 Hypothesis

The aim of the main study is to show when the incentive of the speaker to deny changes in each scenario, the acceptance level of the plausibility of denial will change. In other words, participants will accept the speaker's denial less plausibly when the participants are aware of the speaker's advantage out of the situation under the incentive condition. This hypothesis is tested through two different questions, "the comprehension question" and "the deniability question".

The comprehension question is asked to participants with the same aim in the norming study which is to exclude the answers of the participants who failed to choose the right answer for a question that asks about a detail of the scenario.

As the second question, the deniability question is the question used to test the main aim of the study. Before running the norming study, the hypothesis was to test the deniability question only regarding the incentive condition. However, the results of the norming study pointed out that the existence of incentive causes the reinterpretation of the implicature. This result has created the need for adding another condition, the denial condition, to check whether the existence of the incentive also creates a reinterpretation problem on the deniability question regarding the denial condition before checking the effect of incentive condition on deniability. Denial condition is included in scenarios as non-denial and denial versions of the scenarios. If a scenario is with denial, this means that the denial part is also added to the scenario and participants read both the story and the denial parts and then answer the deniability question.

However, if the scenario is with non-denial condition, then participants read only the story part of the scenario and then answer the deniability question. By applying this condition, it is expected to see that the difference between the incentive and non-incentive versions of the scenarios is smaller under the denial condition compared to the difference under non-denial conditions. In other words, participants are expected to understand the similar implicature regarding the deniability under both incentive and non-incentive versions if the denial part is included in the story. This will lead to the result which claims the possibility of the reinterpretation caused by the incentive condition disappears with the denial condition and reinterpretation is eliminated.

2.3.2 Experimental Design

The main aim of the study is to test the deniability question under two conditions, denial and incentive conditions. To make this analysis possible, each scenario was adapted for four different conditions, with denial & incentive, with non-denial & incentive, with denial & non-incentive and with non-denial & non-incentive. In the condition with denial & incentive, participants read the scenario with incentive and denial part and then they answer the deniability question. However, the participants who are attended to the condition with non-denial & incentive read the scenario with incentive but without the denial part. The same structure is held for the versions with denial & non-incentive and with non-denial & non-incentive. During the experiment, participants were randomly assigned one of the four conditions. Each participant was asked the comprehension question first, right after they read the scenario. After they answer the comprehension question, they are asked the deniability question.

2.3.3 Participants

507 participants, 265 male, 240 female and 2 other, were recruited through MTurk. The average age was 39.96. The youngest participant was 18 years old and the eldest was 90. During the experiment, the only qualification required of participants was that they are above the age of 18. Identifying documents of the participants were not recorded, and all answers were saved anonymously.

2.3.4 Analysis

Testing the incentive condition on the deniability question is the first and main aim of the study. The second aim is to test the denial condition through its interaction with the incentive condition to show how responses to deniability questions change when the interaction term differs among the four conditions (with denial & incentive, with non-denial & incentive, with denial & non-incentive, and with non-denial & non-incentive).

The deniability question, as the dependent variable, is asked to the participants as *"When *speaker* said *target statement*, did he/she mean *intended implicature* or *alternative implicature*?"* with five non-ordered choices. These choices are "*clearly meant *intended implicature*", "probably meant *intended implicature*", "what *speaker* meant is unclear",* "*probably meant *alternative implicature*"* and "*clearly meant *alternative implicature*".* To give a concrete example, this question was asked in Assignment in the following way:

Question: *When Paul said, "That one is too difficult for me", did he mean he didn't answer the last question or since he couldn't solve the last question, he asked Jenny for help?*

Answer: *Paul clearly meant he didn't answer the last question / Paul probably meant he didn't answer the last question / what Paul meant is unclear / Paul probably meant since he couldn't*

solve the last question, so he asked Jenny for help / Paul clearly meant since he couldn't solve the last question, so he asked Jenny for help

Since the deniability question is a categorical dependent variable with 5 different non-ordered categories and the incentive and deniability conditions of each scenario are the binary variables, 1 for the incentive or denial and 0 for the non-incentive or non-denial, multinomial logistic regression was applied to the data. Multinomial logistic regression was preferred since it gives the chance of running the regression with a dependent variable which has 3 or more non-ordered categories. Also, multinomial regression provides the chance to see how the independent variables, incentive and denial conditions affect the categories of the dependent variable, deniability question, when they interact with each other. Through this analysis, it is possible to analyze the change between the dependent variable categories. In addition to Incentive and Denial, gender is also added to the equation to check whether it still has any significant effect on participants' answers since it had a significant effect in some of the scenarios in the norming study. Female is added as a dummy variable which gets 1 if the participant is female and gets 0 if the participant is male. Equation 2 shows the regression model.

$$Deniabilityq \quad = \theta_0 + \theta_1 Incentive \; + \; \theta_2 Denial \; + \; \theta_3 Female \tag{2}$$

Before running the regression, the model was checked in terms of assumptions of the multinomial logistic regression. The first assumption is to have the dependent variable as a non-ordered categorical variable that has 3 or more categories and the deniability question in this model has 5 non-ordered categories as the dependent variable. The second assumption is having one or more of the independent variables as either categorical, ordinal, or continuous. In the defined model, both Incentive, Denial and Female are defined as the categorical variables. The third assumption is to be sure that there is no multicollinearity between the

independent variables. The command named as collin command (Bruin, 2006) in STATA again used to check and the results are represented in **Table 6.** Results show that any significant multicollinearity could not be detected between the independent variables. The last and one of the most important assumptions of multinomial logistic regression is the Independence of Irrelevant Alternatives (IIA) assumption. This assumption is important since it shows that if one of the dependent variable categories is added or deleted, this does not create any change in the analysis of the remaining categories. This assumption was tested by using the Stata command mlogtest, iia (Long & Freese, 2014). Results are represented in **Table 7** and show that IIA assumption was not violated and multinomial regression can be used with this dataset.

2.3.5 Results

Before analyzing the deniability question, the answers to the comprehension questions are analyzed first. **Table 8** shows the number of failures. According to these numbers, only few of the participants failed to give the right answer for the comprehension question, especially compared to the norming study. However, this time the scenario called Assignment has the highest number of failures Holiday has the least. These number of failures were deleted from each scenario's dataset.

After excluding the wrong answers to the comprehension question, participants' answers to the deniability question for each scenario are separately plotted in **Figure 2** and **Figure 3** according to the incentive and denial condition. **Figure 2** shows the distribution of the answers to the deniability question for each scenario regarding the incentive condition. All four scenarios have almost the same distribution for each category of the deniability question. This similarity is a sign for the credibility of the scenario structure while analyzing the study hypothesis. Therefore, it shows that different participants answered the questions in a consistent way even though the scenarios and questions were different and randomly asked to participants regarding

the different conditions. This consistency is the proof of the reliability for the experimental design to test the effect of the incentive condition. **Figure 3** shows the distribution of the participants' answers to different categories for each scenario according to the non-denial and denial conditions. The distribution for the denial condition supports the proof for the credibility of the story flow of scenarios and the experimental design since participants answered the different scenarios in a similar way. For example, participants go for the 1 and 2 more as a general trend among all scenarios if the condition is non-denial which means they do not read the denial part during the experiment and read only the story part. Also, in all scenarios participants generally tend to pick 4 or 5 less under both denial and non-denial conditions. As the last thing, almost in all scenarios except the "New Girl", people tend to say what the implicature is unclear more when they read the denial. These similarities among the distribution of all scenarios under incentive and denial conditions also led me to merge the data from all scenarios and treat them as one scenario. The reason behind this is to decrease the possibility of facing any noise that the small sample size can cause while analyzing each scenario separately through the multinomial logistic regression.

After having the merged dataset, **Table 9** shows the results of the regression for Incentive, Denial, their interaction and Female. However, before interpreting the results, how multinomial logistic regression works should be explained first. During the analysis, one of the categorical variables of the dependent variable is taken as the base value and then the value and significance of the other categories are calculated regarding the base value. For example, in the analysis of this model, the category 3 which is *"Uncertain",* has taken as a base value. Therefore, while the results for the other categories are analyzed, it should be kept in mind that these values are calculated relative to the base 3.

After explaining how multinomial regression works, the incentive condition is interpreted first as the main focus of this study. **Table 9** shows that the incentive condition does not have any

significant effect on any of the deniability question categories when rest of the categories are compared with the base category and other independent variables are held constant. The incentive condition does not work on the deniability question as it is hypothesized at the beginning of the study. Participants tended to say the category 5, which is *"*speaker* clearly meant *alternative implicature*",* less than other categories even with the scenario with incentive. Therefore, the results of this study were not conclusive to establish that incentive can have an important role in the acceptance level of the denial and I could not detect any significant effect of the incentive condition on the decreasing level of the plausibility while participants accept the denial.

However, results in **Table 9** also point out another perspective and show that the denial condition works and it is significant for the category 1 and 2, *"Clearly intended implicature"* and *"Probably intended implicature"*. The significance of this means that if there is denial part in the scenario and the other variables are held constant, it is significantly proved that participants prefer to choose 1, *"*speaker* clearly meant *intended implicature*",* 1.131 less and 2, *"*speaker* probably meant *intended implicature*"*, 1.462 less than they prefer to choose 3, *"what *speaker* meant is unclear"*. Therefore, even if there is no proof to say participants support the existence of alternative implicature by choosing 4 or 5 more, results prove that participants think less than the intended implicature was meant if the denial part is included in the scenario. Under the denial condition, participants move to the uncertain option, 3, from the intended implicature options, 1 and 2. Therefore, the denial part is pushing people to a more neutral point among all answer options.

After the incentive and denial conditions, the interaction term was analyzed to check whether the existence of the denial condition under incentive condition is enough to eliminate the reinterpretation problem which was unexpectedly detected in the norming study. During the norming study, I pointed out that the probability of getting "Yes" for the intended implicature

under the incentive condition was below the probability of getting "Yes" for the intended implicature under the non-incentive condition. Therefore, the possibility that the incentive condition causes people to reinterpret the implicature appeared. Thus, a new hypothesis is tested to eliminate this possibility. The hypothesis is that if the denial condition is added to the scenario, the difference between probability of getting a specific answer under the incentive condition and non-incentive condition will be lower than the probability difference calculated in the norming study.

Table 10 represents the probability values of each category of the dependent variable under the four interaction term conditions (with denial & incentive, with non-denial & incentive, with denial & non-incentive and with non-denial & non-incentive). The probability difference of each answer category regarding the incentive condition is quite small for each category if there is no denial part in the scenario (0.0051 for *"Clearly indented implicature"*, 0.0182 for *"Probably indented implicature"*, -0.0259 for *"Uncertain"*, -0.0211 for *"Probably alternative implicature"* and 0.0238 for *"Clearly alternative implicature").* The total difference for all categories is 0.000042 if there is not the denial part. However, if the denial part is included, the total difference between the incentive and non-incentive conditions gets even smaller, 0.000001.

These results argue that existence of denial helps to eliminate the reinterpretation effect of the incentive condition on the deniability question. This means that participants can visualize a solid alternative implicature when they read a concrete denial story with all details and see how the alternative implicature connects to the story part itself. These results point out the importance of getting information about the situation directly instead of just reading the background and filling the story with possible alternatives is important for participants to be confident about their acceptance level.

3 Conclusion

In the Strategic Speaker Theory, Lee and Pinker (2010) define the speaker as an individual who intentionally uses indirect speech to create an uncertainty in the hearer's mind. The aim of the speaker during this act is to be able to deny plausibly and expect her denial to be accepted plausibly by the hearer in case she needs to deny her utterance. While Lee and Pinker make this definition, they accept the speaker as a rational strategic decision-maker who is seeking the utility maximization while deciding on her preferences. They also argue that the strategic decision process is the reason which is leading individuals to use indirect speech thanks to its highly plausible acceptance level.

In my master thesis, I aimed to challenge this assumption by arguing that the existence of incentive also has an effect on the acceptance level of the denial. Because even though their approaches and analysis methods are quite different, both psychology and economics highlight the possible role of incentives on human behavior since incentives are accepted as the motives which can make people to be involved in an act or avoid the act. Thus, I aimed to test the effect of incentive on the acceptance level of the denial by running an experimental study and analyzing the categorical data by using related logistic regression models.

After preparing 8 scenarios for the experiment, I run the norming study with 261 participants to select the best scenarios to be tested in the main study. I analyzed the data of the incentive question with ordered logistic regression and ended up with 4 scenarios which satisfy the selection conditions. However, the norming study pointed out the existence of the incentive caused an unexpected effect of incentive on the implicature and led participants to reinterpret the scenarios under the incentive condition. This result from the norming study caused a change in the main hypothesis and I added one more condition, denial condition, to test whether the reinterpretation problem continues under the incentive condition. 507 were recruited for the main study and multinomial logistic regression was used to analyze data. According to results,

it is showed that the existence of denial part in the scenario solves the reinterpretation problem which was encountered in the norming study. Thus, people tend to reinterpret less if they read the denial and have information about how and under which conditions the denial occurred. This shows that when people have further information regarding the environment where the communication occurred, they tend to focus on what story suggests instead of turning to their reinterpreted ideas. Even though the reinterpretation problem has solved, the main question of the study still stayed as unknown since any significant results could not be detected to claim that the existence of incentive causes a decrease in the acceptance level of the denial. Regards the results, people did not tend to change their acceptance level even though they were informed about the speaker's possible advantage by tricking the hearer. All four scenarios which were tested in the main study had the similar results when the incentive condition applied. This parallel trend among the scenarios claims that participants consistently preferred to stay unresponsive to the existence of denial. The results of the main study lead us to a bigger question to be asked and analyzed in further studies: Are people really blind to the existence of the incentive or if their unresponsiveness is accepted as the ignorance, do they prefer to stay as ignorant regardless the conditions since the incentives are about the third parties but not themselves?

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Tables

Table 1: Collinearity Diagnostics of each scenario in the norming study

New Girl		SQRT		R-
Variable	VIF	VIF	Tolerance	Squared
Incentive	1.01	1.00	0.9937	0.0063
age_group	1.03	1.02	0.9679	0.0321
Female	1.03	1.01	0.9735	0.0265
Mean VIF	1.02			

Assignment		SQRT		R-
Variable	VIF	VIF	Tolerance	Squared
Incentive	1.01	1.01	0.9897	0.0103
age_group	1.04	1.02	0.9637	0.0363
Female	1.03	1.01	0.9717	0.0283
Mean VIF	1.03			

Beer		SQRT		R-
Variable	VIF	VIF	Tolerance	Squared
Incentive	1.01	1.01	0.9862	0.0138
age_group	1.04	1.02	0.9652	0.0348
Female	1.02	1.01	0.9767	0.0233
Mean VIF	1.02			

Blue Dress		SQRT		R-
Variable	VIF	VIF	Tolerance	Squared
Incentive	1.02	1.01	0.9839	0.0161
age_group	1.06	1.03	0.9449	0.0551
Female	1.04	1.02	0.9599	0.0401
Mean VIF	1.04			

French Dinner		SQRT		R-
Variable	VIF	VIF	Tolerance	Squared
Incentive	1.01	1.00	0.9915	0.0085
age_group	1.03	1.02	0.9699	0.0301
Female	1.02	1.01	0.9766	0.0234
Mean VIF	1.02			

Holiday Plan		SQRT		R-
Variable	VIF	VIF	Tolerance	Squared
Incentive	1.01	1.00	0.9922	0.0078
age_group	1.03	1.01	0.9708	0.0292
Female	1.02	1.01	0.9774	0.0226
Mean VIF	1.02			

Old Building		SQRT		R-
Variable	VIF	VIF	Tolerance	Squared
Incentive	1.01	1.00	0.9911	0.0089
age_group	1.04	1.02	0.9660	0.0340
Female	1.03	1.01	0.9733	0.0267
Mean VIF	1.02			

Party		SQRT		R-
Variable	VIF	VIF	Tolerance	Squared
Incentive	1.01	1.00	0.9948	0.0052
age_group	1.03	1.02	0.9674	0.0326
Female	1.03	1.01	0.9722	0.0278
Mean VIF	1.02			

Table 2: Results of oparallel test of STATA for each scenario

Assignment	Chi2	df	P>Chi2
Wolfe Gould	3.792	6	0.705
Brant	4.113	6	0.661
score	3.962	6	0.682
likelihood ratio	3.859	6	0.696
Wald	3.966	6	0.681

Beer	Chi2	df	P>Chi2
Wolfe Gould	7.712	6	0.260
Brant	7.039	6	0.317
score	8.162	6	0.226
likelihood ratio	8.120	6	0.229
Wald	8.022	6	0.236

Blue Dress	Chi2	df	P>Chi2
Wolfe Gould	1.614	4	0.806
Brant	1.519	4	0.823
score	1.619	4	0.805
likelihood ratio	1.608	4	0.807
Wald	1.637	4	0.802

French Dinner	Chi2	df	P>Chi2
Wolfe Gould	2.608	3	0.456
Brant	1.986	3	0.575
score	2.461	3	0.482
likelihood ratio	2.583	3	0.460
Wald	2.084	3	0.555

Holiday Plan	Chi2	df	P>Chi2
Wolfe Gould	7.494	6	0.278
Brant	9.227	6	0.161
score	7.959	6	0.241
likelihood ratio	7.470	6	0.280
Wald	8.654	6	0.194

New Girl	Chi2	df	P>Chi2

Stata note: Full model cannot be estimated due to perfect prediction

Old Building	Chi2	df	P>Chi2
Wolfe Gould	9.852	6	0.131
Brant	11.360	6	0.078
score	11.600	6	0.072
likelihood ratio	10.810	6	0.095
Wald	10.130	6	0.119

Party	Chi2	df	P>Chi2
Wolfe Gould	2.446	6	0.874
Brant	2.169	6	0.903
score	2.516	6	0.867
likelihood ratio	2.652	6	0.851
Wald	2.552	6	0.863

Table 3: Number of excluded answers to the comprehension question asked in the norming study

	(1)	(2)	(3)	(4)	(5)
Comprehension Question	Non-incentive& Implicature q.	Incentive& Implicature q.	Non-incentive& Incentive q.	Incentive& Incentive q.	Total
Assignment	2	1	2	1	6
Old Building	3	1	2	2	8
Holiday	1	0	3	4	8
New Girl	2	3	1	3	9
French Dinner	2	1	1	4	8
Blue Dress	6	10	9	14	39
Party	1	3	0	3	7
Beer	1	6	3	5	15
Total	18	25	21	36	100

Table 4: Probabilities of getting "Yes" for the implicature question asked in the norming study regarding the incentive condition

	(1)	(2)
Probability of Success	Non-incentive	Incentive
Assignment	0.8413	0.6668
Old Building	0.8548	0.7121
Holiday	0.7385	0.5671
New Girl	0.7077	0.6418
French Dinner	0.9062	0.7761
Blue Dress	0.9322	0.8596
Party	0.7813	0.4180
Beer	0.7656	0.6885

Table 5: Incentive Question (A): Results of the Ordered Logistic Regression (OLR) of Incentive Question regarding the incentive condition, age and gender; (B): Results of the OLR of Incentive Question regarding the incentive condition

Incentive Question (A)	(1) Assignment	(2) Beer	(3) Blue Dress	(4) French Dinner	(5) Holiday Plan	(6) New Girl	(7) Old Building	(8) Party
Incentive	1.414***	.595*	.652*	-.061	1.45***	.932**	1.602***	.477
	(.35)	(.345)	(.354)	(.357)	(.357)	(.363)	(.364)	(.327)
age_group	0	-.349	.092	.266	-.075	-.315	-.141	-.129
	(.338)	(.35)	(.359)	(.366)	(.343)	(.365)	(.354)	(.335)
Female	1.001***	.692*	.445	.457	1.086***	.088	.092	.009
	(.356)	(.362)	(.369)	(.381)	(.363)	(.377)	(.367)	(.344)
Observations	126	121	109	124	122	125	125	126
Pseudo R^2	.07	.025	.016	.011	.075	.034	.073	.007
Incentive Question (B)								
Incentive	1.294***	.618*	.611*	-.099	1.315***	.944***	1.606***	.488
	(.341)	(.34)	(.35)	(.353)	(.348)	(.362)	(.364)	(.325)
Observations	126	121	109	124	122	125	125	126
Pseudo R^2	.045	.011	.01	0	0.05	.031	.073	.007

*Standard errors are in parentheses: *** p<.01, ** p<.05, * p<.1*

Table 6: Collinearity Diagnostics of each scenario in the norming study

Main Study		SQRT		R-
Variable	VIF	VIF	Tolerance	Squared
Incentive	1.00	1.00	0.9997	0.0003
Denial	1.00	1.00	0.9998	0.0002
Female	1.00	1.00	0.9996	0.0004
Mean VIF	1.00			

Table 7: Results of mlogtest, iia command of STATA for each scenario

Omitted	**chi2**	**df**	**P>chi2**	**evidence**
1	0.025	9	1.000	for Ho
2	0.488	9	1.000	for Ho
4	0.143	9	1.000	for Ho
5	0.291	9	1.000	for Ho

Hausman tests of IIA assumption (N=507)

Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

Omitted	**chi2**	**df**	**P>chi2**	**evidence**
1	0.030	9	1.000	for Ho
2	0.334	9	1.000	for Ho
4	0.133	9	1.000	for Ho
5	0.623	9	1.000	for Ho

**** suest-based Hausman tests of IIA assumption (N=507)

Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.

Omitted	lnL(full)	lnL(omit)	chi2	df	P>chi2	evidence
1	-273.886	-267.713	12.346	9	0.195	for Ho
2	-223.017	-216.080	13.873	9	0.127	for Ho
4	-268.229	-260.121	16.216	9	0.062	for Ho
5	-297.923	-292.025	11.798	9	0.225	for Ho

Table 8: Number of Excluded Answers to the Comprehension Question in the Main Study

	(1)	(2)	(3)	(4)	(5)
Comprehension Question	Non-incentive &Denial	Incentive &Denial	Non-incentive &Non-denial	Incentive &Non-denial	Total
Assignment	1	2	1	1	5
Old Building	1	0	2	0	3
Holiday	1	0	0	0	1
New Girl	1	3	0	0	4
Total	4	5	3	1	3

Table 9: Results of the Multinomial Logistic Regression for Deniability Question regarding the incentive condition, denial condition, interaction term and gender

VARIABLES	(1) Clearly intended implicature	(2) Probably intended implicature	(3) Uncertain	(4) Probably alternative implicature	(5) Clearly alternative implicature
1.Incentive	0.147	0.161		-0.109	1.067
	(0.379)	(0.326)		(0.499)	(0.879)
1.Denial	-1.131***	-1.462***		0.448	1.517*
	(0.403)	(0.346)		(0.406)	(0.792)
1.Incentive# 1.denial	0.00872	0.250		0.223	-0.593
	(0.584)	(0.492)		(0.606)	(0.974)
Female	0.157	0.0441		0.419	0.288
	(0.279)	(0.236)		(0.278)	(0.362)
Constant	-0.312	0.592		1.498***	-3.158***
	(0.505)	(0.425)		(0.554)	(0.929)
Observations	507	507	507	507	507

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10: Probabilities of each category of answers for the Deniability Question under the different interaction term conditions

	Deniability==					
Interaction Term - Margins	Clearly indented implicature	Probably indented implicature	Uncertain	Probably alternative implicature	Clearly alternative implicature	Total
incentive# denial						
Yes#No	0.2187	0.4610	0.2031	0.0781	0.0390	1
No#No	0.2137	0.4427	0. 2290	0.0992	0.0153	1
Difference	0.0051	0.0182	-0.0259	-0.0211	0.0238	0.000042
Yes#Yes	0.1074	0. 2066	0. 3058	0.2314	0.1487	1
No#Yes	0.1102	0 .1653	0.3708	0.2441	0.1102	1
Difference	-0.0028	0.0412	-0.0643	-0.0127	0.0385	0.000001

Figures

Figure 1: Distribution of answers to the incentive question for each scenarios under the incentive condition

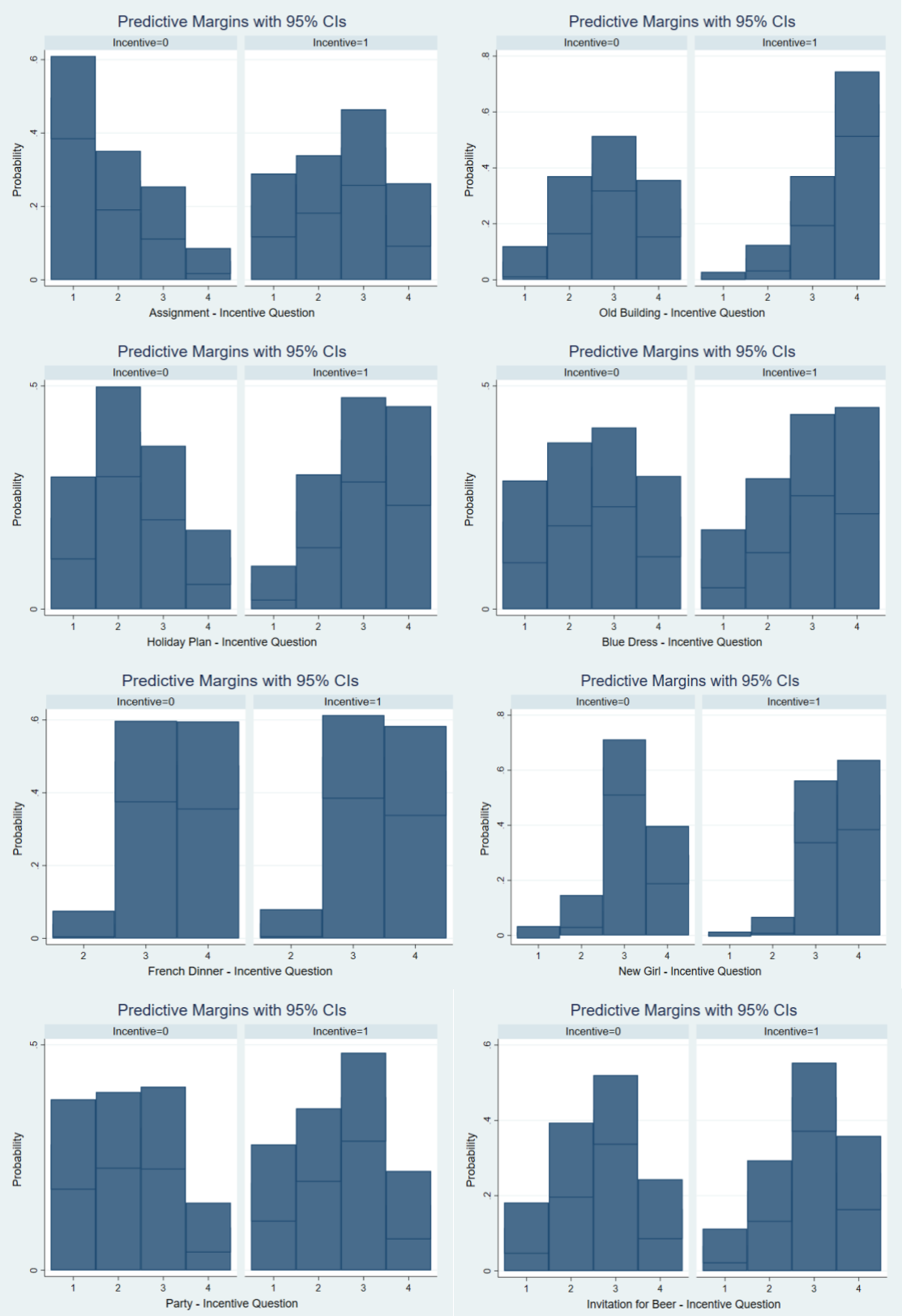


Figure 2: Distribution of the answers to the deniability question in the main study for each scenario regarding the incentive condition

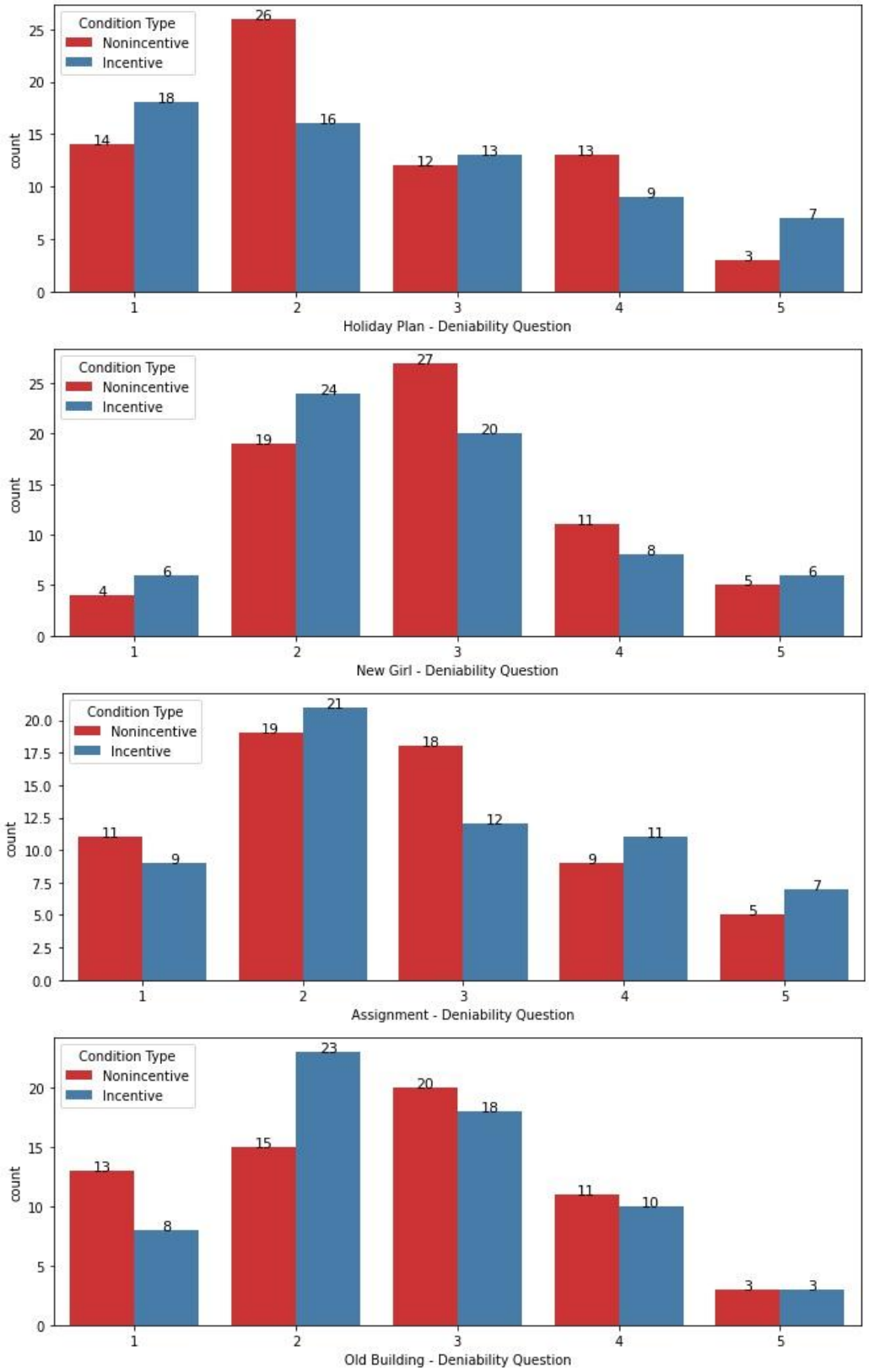
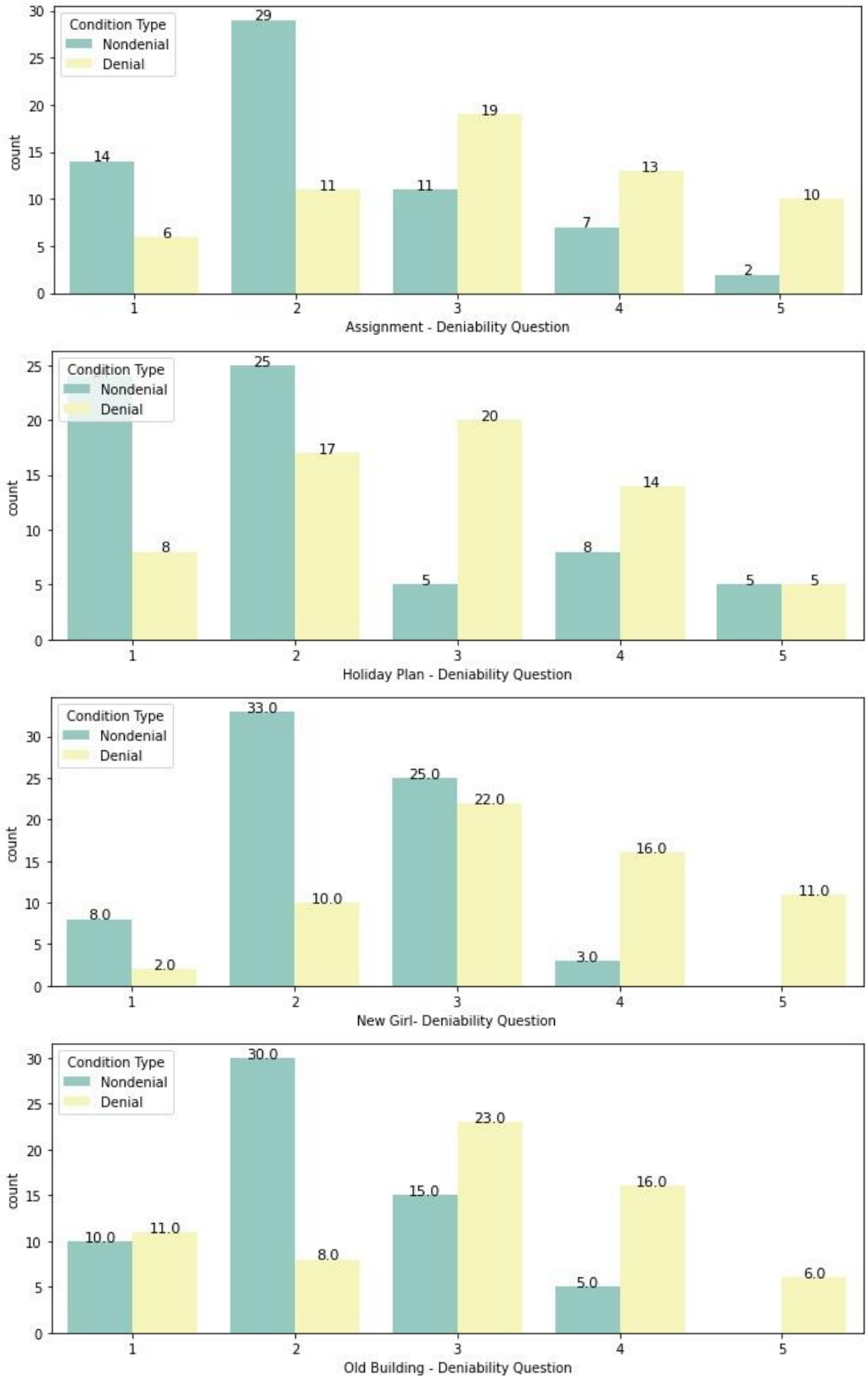


Figure 3: Distribution of the answers to the deniability question in the main study for each scenario regarding the denial condition



Appendices Main Study

1. "Assignment"

Version without Incentive & without Denial

Mark and Paul take the same course and are currently working on a group assignment. Students will get the highest grade if their group performs in the top 5%.
Mark and Paul are in the same group. They know that their group has good chances to end up among the top 5%, and both are very motivated. Mark feels confident about all answers except the last one, which may cost them the top-5% position.
Mark asks Paul:

- Hi Paul, I worked on the assignment's questions, but I couldn't answer the last one. It's so hard. Do you know the answer?

Paul answers:

- ***That one is too difficult for me.***

[Implicature: I didn't answer the last question.]

****

Version without Incentive & with Denial

Mark and Paul take the same course and are currently working on a group assignment. Students will get the highest grade if their group performs in the top 5%.
Mark and Paul are in the same group. They know that their group has good chances to end up among the top 5%, and both are very motivated. Mark feels confident about all answers except the last one, which may cost them the top-5% position.
Mark asks Paul:

- Hi Paul, I worked on the assignment's questions, but I couldn't answer the last one. It's so hard. Do you know the answer?

Paul answers:

- ***That one is too difficult for me.***

[Implicature: I didn't answer the last question.]

Denial

Mark spent hours thinking about the last question but couldn't find the correct answer. After submitting their assignment, Mark learns that Paul added the correct answer to the last question just before the submission deadline. Thus, since they answered correctly to all questions, their group assignment ranked among the top-5%.
Mark says to Paul:

- I thought you said that you didn't answer the last question.

Paul answers:

- Oh no, I didn't say that. I just meant that since I also could not solve the last question, I asked Jenny for help.

****

Version with Incentive & without Denial

Mark and Paul take the same course and are currently working on an assignment. Students will get the highest grade if they perform in the top 5%.
Mark and Paul are doing the assignment individually. They know that they have good chances to end up among the top 5%, and both are very motivated. Mark feels confident about all his answers except the last one, which may cost him the top-5% position.
Mark asks Paul:

- Hi Paul, I worked on the assignment's questions, but I couldn't answer the last one. It's so hard. Do you know the answer?

Paul answers:

- ***That one is too difficult for me.***

[Implicature: I didn't answer the last question.]

****

Version with Incentive & with Denial

Mark and Paul take the same course and are currently working on an assignment. Students will get the highest grade if they perform in the top 5%.
Mark and Paul are doing the assignment individually. They know that they have good chances to end up among the top 5%, and both are very motivated. Mark feels confident about all his answers except the last one, which may cost him the top-5% position.

Mark asks Paul:

- Hi Paul, I worked on the assignment's questions, but I couldn't answer the last one. It's so hard. Do you know the answer?

Paul answers:

- ***That one is too difficult for me.***

[Implicature: I didn't answer the last question.]

Denial

Mark spent hours thinking about the last question but, in the end, managed to answer it. After submitting his assignment, Mark learns that Paul answered all questions correctly including the last one. Since both Mark and Paul answered all the questions correctly, both their assignments ranked among the top-5%.

Mark says to Paul:

- I thought you said that you didn't answer the last question.

Paul answers:

- Oh no, I didn't say that. I just meant that since I couldn't solve the last question, I asked Jenny for help.

****

DEPENDENT VARIABLES:

- Comprehension Question

How do Mark and Paul know each other? (same workplace/ same course/ same dorm)

- Deniability Question

When Paul said "***That one is too difficult for me***", did he mean he didn't answer the last question or since he couldn't solve the last question, he asked Jenny for help?

(1: Paul clearly meant he didn't answer the last question,

2: Paul probably meant he didn't answer the last question,

3: what Paul meant is unclear,

4: Paul probably meant since he couldn't solve the last question, so he asked Jenny for help,

5: Paul clearly meant since he couldn't solve the last question, so he asked Jenny for help)

2. "The new girl"

Version without Incentive & without Denial

Tommy and Thelma are siblings and have a very close relationship. They live in the same college dorm. At the beginning of the new term, they meet a new student, Sara, in the dorm cafeteria.

Tommy and Sara start spending a lot of time together, and Tommy knows that Thelma also likes Sara and is happy about them hanging out.

One day Thelma looks for Tommy and cannot find him anywhere.

Thelma asks Tommy when he is back:

- Where were you? I couldn't find you anywhere.

Tommy answers:

- ***Sorry, I went to the laundry room.***

[Implicature: I was doing my laundry.]

****

Version without Incentive & with Denial

Tommy and Thelma are siblings and have a very close relationship. They live in the same college dorm. At the beginning of the new term, they meet a new student, Sara, in the dorm cafeteria.

Tommy and Sara start spending a lot of time together, and Tommy knows that Thelma also likes Sara and is happy about them hanging out.

One day Thelma looks for Tommy and cannot find him anywhere.

Thelma asks Tommy when he is back:

- Where were you? I couldn't find you anywhere.

Tommy answers:

- ***Sorry, I went to the laundry room.***

[Implicature: I was doing my laundry.]

Denial

Later, some friends tell Thelma that Tommy and Sara were together that afternoon.

Thelma says to Tommy:

- I thought you said that you were doing your laundry.

Tommy answers:

- Oh no, I didn't say that. I just meant that I was helping Sara because she didn't know how to use the washing machine and asked me for help.

****

Version with Incentive & without Denial

Tommy and Thelma have been in a relationship for a few years. They live in the same college dorm. At the beginning of the new term, they meet a new student, Sara, in the dorm cafeteria. Tommy and Sara start spending a lot of time together, and Tommy knows that Thelma does not like Sara and is not happy about them hanging out.

One day Thelma looks for Tommy and cannot find him anywhere.

Thelma asks Tommy when he is back:

- Where were you? I couldn't find you anywhere.

Tommy answers:

- ***Sorry, I went to the laundry room.***

[Implicature: I was doing my laundry.]

****

Version with Incentive & with Denial

Tommy and Thelma have been in a relationship for a few years. They live in the same college dorm. At the beginning of the new term, they meet a new student, Sara, in the dorm cafeteria. Tommy and Sara start spending a lot of time together, and Tommy knows that Thelma does not like Sara and is not happy about them hanging out.

One day Thelma looks for Tommy and cannot find him anywhere.

Thelma asks Tommy when he is back:

- Where were you? I couldn't find you anywhere.

Tommy answers:

- ***Sorry, I went to the laundry room.***

[Implicature: I was doing my laundry.]

Denial

Later, some friends tell Thelma that Tommy and Sara were together that afternoon.

Thelma says to Tommy:

- I thought you said that you were doing your laundry.

Tommy answers:

- Oh no, I didn't say that. I just meant that I was helping Sara because she didn't know how to use the washing machine and asked me for help.

****

DEPENDENT VARIABLES:

- Comprehension Question

Who was Thelma looking for that afternoon? (Tommy/ Sara/ Nobody)

- Deniability Question

When Tommy said "***I went to the laundry room***", did he mean he was doing his laundry or he was helping Sara because she didn't know how to use the washing machine?
(1: Tommy clearly meant he was doing his laundry,
2: Tommy probably meant he was doing his laundry,
3: what Tommy meant is unclear,
4: Tommy probably meant he was helping Sara because she didn't know how to use the washing machine,
5: Tommy clearly meant he was helping Sara because she didn't know how to use the washing machine)

3. "Holiday Plan"

Version without Incentive & without Denial

Hanna learns that her colleagues plan to go to a hotel near the beach this weekend and decides to join them. She learns that all single rooms in the hotel are booked, but she could share a room with either Patricia or Claire.
She would prefer to stay with Patricia since they have been very good friends for some time and have been sharing rooms on similar occasions in the past.
Hanna asks Patricia:

- Do you want to share the room with me?

Patricia answers:

- ***I already made all the booking with my new colleague yesterday.***

[Implicature: I will share my room with my new colleague.]

****

Version without Incentive & with Denial

Hanna learns that her colleagues plan to go to a hotel near the beach this weekend and decides to join them. She learns that all single rooms in the hotel are booked, but she could share a room with either Patricia or Claire.

She would prefer to stay with Patricia since they have been very good friends for some time and have been sharing rooms on similar occasions in the past.

Hanna asks Patricia:

- Do you want to share the room with me?

Patricia answers:

- ***I already made all the booking with my new colleague yesterday.***

[Implicature: I will share my room with my new colleague.]

Denial

Later on, Hanna learns that Patricia is alone in a double room rather than sharing it with her new colleague.

She asks Patricia:

- I thought you said that you were sharing your room with your new colleague.

Patricia answers:

- Oh no, I didn't say that. I meant that we made the booking online together, not that we had booked a room for us two.

****

Version with Incentive & without Denial

Hanna learns that her colleagues plan to go to a hotel near the beach this weekend and decides to join them. She learns that all single rooms in the hotel are booked, but she could share a room with either Patricia or Claire.

She would prefer to stay with Patricia since they have been very good friends for some time and have been sharing rooms on similar occasions in the past. Patricia, however, knows that Hanna often snores loudly.
Hanna asks Patricia:

- Do you want to share your room with me?

Patricia answers:

- ***I already made all the booking with my new colleague yesterday.***

[Implicature: I will share my room with my new colleague.]

****

Version with Incentive & with Denial

Hanna learns that her colleagues plan to go to a hotel near the beach this weekend and decides to join them. She learns that all single rooms in the hotel are booked, but she could share a room with either Patricia or Claire.
She would prefer to stay with Patricia since they have been very good friends for some time and have been sharing rooms on similar occasions in the past. Patricia, however, knows that Hanna often snores loudly.
Hanna asks Patricia:

- Do you want to share your room with me?

Patricia answers:

- ***I already made all the booking with my new colleague yesterday.***

[Implicature: I will share my room with my new colleague.]

Denial

Later on, Hanna learns that Patricia is alone in a double room rather than sharing it with her new colleague.
She asks Patricia:

- I thought you said that you were sharing your room with your new colleague.

Patricia answers:

- Oh no, I didn't say that. I meant that we made the booking online together, not that we had booked a room for us two.

****

DEPENDENT VARIABLES:

- Comprehension Question

Where do Hanna's colleagues want to go on holiday? (Beach/ Mountain/ Sightseeing)

- Deniability Question

When Patricia said "***I already made all the booking with my new colleague yesterday.***", did she mean she will share her room with her new colleague or she made the booking online together with her new colleague, not that they had booked a room together?
(1: Patricia clearly meant she will share her room with her new colleague ,
2: Patricia probably meant she will share her room with her new colleague,
3: what Patricia meant is unclear ,
4: Patricia probably meant she made the booking online together with her new colleague, not that they had booked a room together,
5: Patricia clearly meant she made the booking online together with her new colleague, not that they had booked a room together)

4. "The old building"

Version without Incentive & without Denial

Karin and her flat mate had independent contracts with the landlord when they moved into the apartment. Therefore, even though her flat mate vanished, Karin is obligated to pay only her own share.

Karin has no financial pressure to find a new flat mate, and as a matter of fact, she is very happy to have the whole apartment for herself.
In the meantime, Susan moves to the city for her studies and is looking for a room and gets to know about the free room in Karin's apartment.
When asking Karin information about the room, Susan asks her:

- Is there any specific problem you are regularly facing in the flat?

Karin answers:

- ***Everything was renewed last year.***

[Implicature: There are no problems with the flat.]

****

Version without Incentive & with Denial

Karin and her flat mate had independent contracts with the landlord when they moved into the apartment. Therefore, even though her flat mate vanished, Karin is obligated to pay only her own share.

Karin has no financial pressure to find a new flat mate, and as a matter of fact she is very happy to have the whole apartment for herself.

In the meantime, Susan moves to the city for her studies and is looking for a room and gets to know about the free room in Karin's apartment.

When asking Karin information about the room, Susan asks her:

- Is there any specific problem you are regularly facing in the flat?

Karin answers:

- ***Everything was renewed last year.***

[Implicature: There are no problems with the flat.]

Denial

Right after Susan moves into the flat, the electricity in the building goes off. Susan hears a neighbor who complains about how frequently this happens due to the building's old electricity system.

Susan says Karin:

- I thought you said that there are no problems with the flat.

Karin says:

- Oh no, I didn't say that. I just meant that we did everything we could to avoid these power cuts, but they keep happening due to the building's old electricity system.

****

Version with Incentive & without Denial

Karin and her flat mate signed the contract together with the landlord when they moved into the apartment. However, her flat mate vanished, and now Karin is obligated to pay the full rent herself.

Karin is very anxious to find someone as soon as possible because she will have to pay the full rent herself in case, she does not have a new flat mate.

In the meantime, Susan moves to the city for her studies and is looking for a room and gets to know about the free room in Karin's apartment.

When asking Karin information about the room, Susan asks her:

- Is there any specific problem you are regularly facing in the flat?

Karin answers:

- ***Everything was renewed last year.***

[Implicature: There are no problems with the flat.]

****

Version with Incentive & with Denial

Karin and her flat mate signed the contract together with the landlord when they moved into the apartment. However, her flat mate vanished, and now Karin is obligated to pay the full rent herself.

Karin is very anxious to find someone as soon as possible because she will have to pay the full rent herself in case, she does not have a new flat mate.

In the meantime, Susan moves to the city for her studies and is looking for a room and gets to know about the free room in Karin's apartment.

When asking Karin information about the room, Susan asks her:

- Is there any specific problem you are regularly facing in the flat?

Karin answers:

- ***Everything was renewed last year.***

[Implicature: There are no problems with the flat.]

Denial

Right after Susan moves into the flat, the electricity in the building goes off. Susan hears a neighbor who complains about how frequently this happens due to the building's old electricity system.

Susan says Karin:

- I thought you said that there are no problems with the flat.

Karin says:

- Oh no, I didn't say that. I just meant that we did everything we could to avoid these power cuts, but they keep happening due to the building's old electricity system.

****

DEPENDENT VARIABLES:

- Comprehension Question

Why does Susan move to the city? (to study/ to work/ to travel)

- Deniability Question

When Karin said "***Everything was renewed last year.***", did she mean there are no problems with the flat or they did everything they could to avoid these power cuts, but they keep happening due to the building's old electricity system?

(1: Karin clearly meant there are no problems with the flat,

2: Karin probably meant there are no problems with the flat,

3: what Karin meant is unclear,

4: Karin probably meant they did everything they could to avoid these power cuts, but they keep happening due to the building's old electricity system,

5: Karin clearly meant they did everything they could to avoid these power cuts, but they keep happening due to the building's old electricity system)